Annexure -III

No. J-11015/710/2007-IA.II(M)
Government of India
Ministry of Environment & Forests

Paryavaran Bhavan,
C.G.O. Complex, Lodi Road,
New Delhi-110 003.

Dated the 6th May, 2011

To

M/s Uranium Corporation of India Limited
P.O. Jaduguda Mines,
District West Singhbhum,
Jharkhand-832 102
E-mail: uranium@ucil.gov.in
env@ucil.gov.in

Subject: Jaduguda Uranium Ore Mining and Uranium Ore Processing Plant Project of M/s Uranium Corporation of India Limited located in Village(s) Ichra, Mechuya and Tilaitand, Tehsil Dhalbhumgarh, District East-Singhbhum, Jharkhand-environmental clearance regarding.

Sir,

This has reference to your letter No. UCIL/GM(Mine)/03/2010 dated 15.07.2010 and subsequent letter dated 01.12.2010 on the subject mentioned above. The project was earlier prescribed Terms of Reference (TORs) by the Ministry of Environment and Forests on 25.01.2008 for undertaking detailed EIA study for the purpose of obtaining environmental clearance. The proposal is for renewal of mine lease which fell due in 2007 for production of 1000tonnes per day(TPD)[(0.3million tonnes per annum(TPA)] and enhancement of capacity of ore processing plant from 2090TPD(6,27,000TPA) to 2500TPD(8,25,000TPA).

2. The total land requirement of the project is 509.24ha, which includes total mine lease area of 388.23ha, out of which 73.26ha is an agricultural land, 79.89ha is forestland and 235.06ha is others (100.14ha settlement, 30.11ha roads and infrastructure, 5.29ha open land, 20.52ha tailing pond and 79ha greenbelt/ plantation). It has been stated that an area of 114.91ha land has been acquired for tailing pond and other facilities outside the lease area, including an area of 6.37ha of forest land for tailing pond. Out of the total lease area, an area of 2ha is kept for mineral storage, 12.11ha for infrastructure, 22.8ha for roads, 63ha for green belt, 35.59ha for tailings pond, 1ha for effluent treatment plant, 12ha for mineral separation plant, 54.63ha for township area and 184.1ha is others. It has been reported that the area is drained by the Gara Nallah, which flows North-Eastern part of the lease area and joins the Subarnarekha River at about 5km South-East of the lease boundary near Digri Ashram. Major part of the area has dendritic drainage pattern. The Hill ranges are drained by seasonal streams, which form the part of the Subarnrekha River System.

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3. No national park/wildlife sanctuary/biosphere reserve/tiger reserve/elephant reserve etc. are reported to be located in the core and buffer zone of the mine and that the area does not report to form corridor for Schedule-I fauna. The Open Mixed Jungle (Sal) and the Dense Mixed Jungle (Sal) reported to be present in the study area.

4. The mine working will be underground using horizontal cut and fill method. A slice of 2m thick rock is cut and 2m from bottom is filled up by classified ore processing plant tailings. The horizontal slice is taken by drilling upper hole or by horizontal holes. The method is cyclic in nature. The targetted production capacity of the mine is 0.3millionTPA and the life of mine is 10years. The transportation of mineral from mine to the processing plant will be by conveyor. The Jaduguda ore extracted at Jaduguda, Bhatin and Narwapahar mines are processed at Jaduguda Ore Processing Plant. The ore processing capacity of the Jaduguda Plant is 6,27,000TPA. The methodology adopted in the ore processing plant is a hydro-metallurgical using crushing and wet grinding, thickening and dewatering; sulphuric acid leaching, clarification, ion exchange and elution of adsorbed uranium with acidic brine, iron and product MDU(Magnesium di urinate)precipitation, filtration and spray drying of the MDU slurry and packing and storage of the finished product. The liquor coming out of the Ion- Exchange columns after absorption of uranium is called barren liquor, which is sent to the tailing treatment plant and treated with lime solution to raise the pH to 10.5-11.5. It is then mixed with the Secondary Drum Filters, repulped cake. From this slurry, sand slime separation is done in two stage. Hydro cyclones and sand goes to the mines for backfilling and the slimes are pumped to the slimes dam for containment. The sludge from the ETP will be sent to the tailing pond. The sewage from the colony is treated in the STP before discharge. The mine site is reported to lies between 22°38'53" to 22°39'20" N Latitude and 86°20'04" to 86°22'01" E Longitude in Survey of India topo sheets No. 73J/6 at an elevation above mean sea level ranging from 100-155m AMSL. The present working depth of mine is 555m bgl(-440m RL) and the ultimate working depth of mine will be 905m bgl(-790m RL). The groundwater table is reported to be varying between 2.1m bgl(88.8 mRL) to 11.2m bgl(92 amsl). The mine working will intersect the ground water table. It was reported that stope pumping is followed to prevent the possibility of mine flooding. It is estimated that 930m^3 of water is pumped out per day and sent to the ore processing plant. The total water requirement of the project is estimated as 12,230m^3 per day, out of which 2400 m^3 per day is recycled water from ETP, 930 m^3 per day from the mine water and 8900 m^3 per day will be sourced from the barrage on Gara River. The water requirement for plantation is estimated as 40 m^3 per day. Based on the hydro-geological study, it has been reported that the stage of groundwater development is 14.5%. It has been reported that 4181households from three villages comprising a population of 20,693 people are in the core zone; however, displacement of population and R&R has not been envisaged as it being an expansion project without additional land procurement. It is estimated that 2090TPD of solid

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waste (mill tailings) will be generated, out of which about 1,000TPD tailings will be taken underground for filling of the void. There are three tailing ponds. The tailing pond No.1(33.18ha) & tailing pond No.2(14.16ha) have filled up to the designed capacity and are now not used for any disposal. The tailing pond No.3(30.76ha) is in operation. The tailing pond is lined with impervious liner to reduce seepage of water. Garland drain and storm water drain are also provided as additional safeguard measures. Total plantation area will be 79ha. The width of plantation along the periphery varies between 15m-300 m.

5. The public hearing of the project was held on 26.05.2009. The Department of Atomic Energy, Atomic Mineral Directorate for Exploration and Research, approved modified mining plan of the project on 08.12.2010 for lease area of 388.23ha. The Ministry of Environment and Forests has accorded forestry clearance for diversion of 53.783ha surface forestland and 100.681ha of forestland for underground mining on 20.04.1998. Subsequently, the Ministry of Environment and Forests has accorded forestry clearance for diversion of additional 6.37ha forestland for construction of Stage-III Tailing Dam on 12.02.2004. The capital cost of the project is Rs.26,625.30Lakhs including 2100 Lakhs for expansion. The capital cost for environmental protection measures is proposed as Rs.178.57Lakhs and the annual recurring cost towards the environmental protection measures is proposed as Rs.412.5Lakhs. It has been mentioned in the questionnaire that there is no court case to the project or related activity.

6. The Ministry of Environment and Forests has examined the application in accordance with the EIA Notification, 2006 and hereby accords environmental clearance under the provisions thereof to the above mentioned Jaduguda Uranium Ore Mining and Uranium Ore Processing Plant Project of M/s Uranium Corporation of India Limited, for an annual production capacity of 300,000(0.3million tonnes) of uranium ore and enhancement of capacity of Ore Processing Plant to 2500TPD(8,25,000TPA) involving total land requirement of 509.24ha including mining lease area of 388.23ha, subject to implementation of the following conditions and environmental safeguards.

A. **Specific conditions**

(i) The project proponent shall obtain Consent to Establish and Consent to Operate from the Jharkhand State Pollution Control Board and effectively implement all the conditions stipulated therein.

(ii) The environmental clearance is subject to approval of the State Landuse Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use.

(iii) The environmental clearance is subject to grant of forestry clearance. The project proponent shall obtain requisite prior forestry clearance

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under the Forest (Conservation) Act, 1980 for working in the forest area.

(iv) The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations.

(v) The top soil, if any, shall be stacked at earmarked site(s) only with adequate measures and it should not be kept unutilized for a period more than 3years. The topsoil should be used for land reclamation and rehabilitation of mined out areas.

(vi) Regular monitoring of subsidence movement on the surface over working areas and impact on water bodies/vegetation/ structures/ surrounding shall be continued till movement ceases completely. In case of observation of any slight rate of subsidence movement, appropriate measures shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clayey soil/suitable material.

(vii) All the mine entries shall be above the highest flood level to avoid any anticipated flooding of mine from the surface water during the rainy season.

(viii) In areas where subsidence is anticipated in shallow mineral occurrence, such areas be identified and provided with garland drains to ensure draining of water and avoid ingress of the same in to the underground mine.

(ix) The project authorities shall check the possibility of existence of fault(s) before deciding about the thickness of safe barrier required to be maintained between the working face and the water bodies, if any, in consultation with the Director General Mines & Safety (DGMS). De-pillaring should also be carried out after taking prior approval of the DGMS.

(x) The project proponent shall carry out conditioning of the ore with water to mitigate fugitive dust emission, without affecting flow of ore in the ore processing and handling areas.

(xi) The effluent from the ore beneficiation plant shall be treated to conform to the prescribed standards and the tailings slurry shall be transported through a closed pipeline to the tailing dam.

(xii) The decanted water from the tailing dam shall be re-circulated and there should be zero discharge from the tailing dam.

(xiii) The project proponent shall develop effective emergency response procedures to ensure appropriate risk management measures in the public domain, if any, due to the project.

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(xiv) Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.

(xv) Plantation shall be raised in an area of 79ha including a 7.5m wide green belt in the safety zone around the mining lease, around processing plant, around tailing dam, roads etc. by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.

(xvi) The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.

(xvii) Regular monitoring of ground water level and quality shall be carried out in and around the project area (mine lease, ore processing plant and tailing dam) by establishing a network of existing wells and installing new piezometers during the operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.

(xviii) The project authorities should obtain prior approval of the competent authority for drawal of surface water, required for the project.

(xix) The mineral handling plant should be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.

(xx) Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. Overloading of trucks should be avoided to stop spillage. The ore shall be transported through closed containment to prevent spillage.

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(xxi) Digital processing of the entire lease area using remote sensing technique should be done regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar.

(xxii) The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as python, etc. spotted in the study area in consultation with the concerned forest officials. Action plan so prepared for conservation of flora and fauna shall be implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar within 3 months.

(xxiii) Monitoring of background radiation levels in water, soil and ambient air should be carried out periodically in the study area (core and buffer zone) of the project.

(xxiv) The plants growing in the area, soil invertebrate animals and local agricultural produce should be analyzed to check the build up of radioactivity levels, if any.

(xxv) Discharges from the treatment plant and settling pits should be constantly monitored for concentration of radio nuclides.

(xxvi) Sludge from the treatment plant and settling pit shall be transported to the tailing pond in safe containment.

(xxvii) The project proponent shall have an emergency response plan to ensure that all potentially affected people understand the possible causes and consequences of radiation and other project related activities.

(xxviii) Wet drilling and water spraying on muck should be practiced to reduce generation of silica and low level of radio-activity in the work place. The external radiation dose should be monitored quarterly to ensure that workers engaged in the work place are not over exposed.

(xxix) Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

(xxx) The critical parameters such as SPM, RSPM, NO_x in the ambient air within the impact zone, peak particle velocity at 300m distance or within

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the nearest habitation, whichever is closer shall be monitored periodically . Further, quality of discharged water shall also be monitored [(TDS, DO, PH, Total Suspended Solids (TSS) and radio nuclides]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The circular No. J-20012/1/2006-IA.II(M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.

(xxxi) A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.

B. General conditions

(i) No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests.

(ii) No change in the calendar plan including excavation, quantum of mineral uranium ore and waste should be made.

(iii) Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10micron i.e., PM_{10}) and NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.

(iv) Data on ambient air quality RSPM (Particulate matter with size less than 10micron i.e., PM_{10}) & Nox should be regularly submitted to the Ministry of Environment and Forests including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.

(v) Fugitive dust emission from all the sources be controlled regularly mentioned and data recorded properly. Water spraying arrangements of haul roads, wagon loading, dumps loading 7 unloading points should be provided and properly maintained.

(vi) Adequate measures should be taken for control of noise levels within prescribed standards. Workers engaged in blasting and drilling operations of HEMM, etc., should be provided with ear plugs/muffs.

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(vii) Industrial wastewater (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of effluents from workshop.

(viii) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.

Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.

(ix) A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.

(x) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Bhubaneswar.

(xi) The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.

(xii) The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.

(xiii) The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board.

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(xiv) A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.

(xv) The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.

(xvi) The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent 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 Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.

(xvii) The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at **http://envfor.nic.in** and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.

7. The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.

8. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.

9. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules made thereunder and also any other orders passed by the Hon'ble Supreme Court of India/High Court of Gujarat and any other Court of Law relating to the subject matter.

06.05.2011

(SATISH C. GARKOTI)
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Copy to:

1. The Secretary, Ministry of Mines, Government of India Shastri Bhawan, New Delhi.
2. The Secretary, Department of Atomic Energy, Government of India, Chatrapati Shivaji Maharaj Marg, Mumbai -400 001
3. The Secretary, Department of Environment, Government of Jharkhand, Secretariat, Ranchi.
4. The Secretary, Department of Mines, Government of Jharkhand, Secretariat, Ranchi.
5. The Chief Wildlife Warden, Government of Jharkhand, Secretariat, Ranchi.
6. The Chief Conservator of Forests, Ministry of Environment & Forests, Regional Office (EZ), A/3, Chandra Shekar, Bhubneshwar-751 023
7. Chairman, Central Pollution Control Board, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
8. Chairman, Jharkhand State Pollution Control Board, T.A. Division Building (Ground Floor), HEC Campus, P.O. Dhurwa, Ranchi ? 834004, Jharkhand
9. Member Secretary, Central Ground Water Authority, A2, W3 Curzon Road Barracks, K.G. Marg, New Delhi-110001.
10. District Collector, Singhbhum (E) District, Jharkhand.
11. EI Division, Ministry of Environment & Forests, EI Division, New Delhi.
12. Monitoring File.
13. Guard File.
14. Record File.