

No.J-11015/38/2006-IA.II(M)  
Government of India  
Ministry of Environment & Forests

Paryavran Bhawan,  
C.G.O.Complex, Lodi Road,  
New Delhi-110003.

Dated: 6<sup>th</sup> December, 2006

To,

M/s Ferro Alloys Corporation Ltd.  
Chrome Ore Mining Division,  
Laxmi Bhawan, Kunas,  
Bhadrak-756 100,  
Orissa

Subject: Expansion of Ostapal Chromite Mining Project of M/s Ferro Alloys Corporation Ltd. located in Village Gurujanga, Tehsil Sukinda, District Jajpur, Orissa - environmental clearance -reg.

Sir,

This has reference to your letter No 'Nil' dated 06.02.2006 and subsequent letters dated 02.05.2006 and 15.06.2006 on the subject mentioned above. It has been noted that the proposal is for grant of environmental clearance under the provisions of EIA Notification, 1994 for enhancement of production of chromite ore from 0.085 million TPA to 0.2 million TPA. The total mine lease area of the project is 72.843 ha, out of which 4.419 ha is an agricultural land and 68.424 ha is forestland. Area proposed for mining is .36.12 ha, an area of 0.25 ha is kept for storage of topsoil, 21.34 ha for OB dumps, 3.55 ha for storage of topsoil, 0.25 ha for infrastructure, 1.10 ha for roads, 4.43 ha for green belt, 0.39 ha for effluent treatment plant, 1.20 ha for township area & essential infrastructure and 4.213 ha is others. No ecologically sensitive area such national park/sanctuary/biosphere reserve etc. is located within core and buffer zone of the project. Nandan Kanan National Park is located at a distance of 60 km from the mine lease. The targeted production capacity of the mine is 2,00,000 tonnes per annum (0.2 million tonnes per annum) of chromite ore and life of mine is 20 years. Working is opencast by semi-mechanised method involving blasting. The topography of the area is mostly flat with very gentle slope at an elevation of 148 m AMSL. Present working depth of mine is 63 m bgl and ultimate working depth of the mine will be 118 m bgl. Water table is in the range of 7.7 m bgl to 12.5 m bgl in the core zone (pre monsoon and post monsoon) and 0.5 m bgl to 10.95 m bgl in the buffer zone (pre monsoon and post monsoon). Working will intersect groundwater table and approximately 2046 m<sup>3</sup>/d will be the likely discharge from the mine during monsoon season. There are 65 households comprising a population of 170 persons from the project residential colony are in the core zone. Displacement of population and R&R is not involved. Peak water requirement of the project is 806 m<sup>3</sup>/day, out of which 45 m<sup>3</sup>/day will be met from groundwater and balance from mine sump water. Approximately 39884.13 m<sup>3</sup>/month of solid waste comprising 375 m<sup>3</sup>/month of topsoil, 38224 m<sup>3</sup>/month of OB and 1385 m<sup>3</sup>/month of tailings will be generated. No backfilling is envisaged. About 31.0 Lakh m<sup>3</sup> of OB has already been accumulated and another 88.0 Lakh m<sup>3</sup> OB will be likely generated during the life of the mine. There will be two external OB dumps. Plantation will be raised in an area of 33.02 ha at the end of the mine life and an area of 36.12 ha will be developed as water body at the post mining stage. The Consent to Establish issued by the State Pollution Control Board, Orissa on 31.01.2006 for enhancement of production of chromite ore from 85000 TPA to 2.0 Lakh TPA and beneficiated chrome.

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ore capacity from 30,000 TPA to 1.0 lakh TPA involving lease area of 72.843 ha. The State Pollution Control Board, Orissa has conducted public hearing of the project on 22.09.2005. Indian Bureau of Mines has approved modified mining plan of the project on 06.10.2005 for lease area 72.843 ha. Ministry of Environment and Forest has granted in principle forestry clearance for diversion of 64.354 ha forestland on 03.10.2005. Capital cost of the project is Rs.618.0 Lakhs.

2. The Ministry of Environment and Forests has examined the application in accordance with Section 12 of EIA Notification 2006 read with para 1.1 of the Circular No.J-11013/41/2006-IA.II(I) dated 13.10.2006 and hereby accords environmental clearance under the provisions thereof to the above mentioned Ostapal Chromite Mining Project of M/s Ferro Alloys Corporation Ltd. for production capacity of 2,00,000 tonnes per annum (0.2 million tonnes per annum) of chromite ore by opencast semi-mechanised method involving total lease area of 72.843 ha subject to implementation of the following conditions and environmental safeguards:

**A. Specific conditions:**

- (i) All the conditions stipulated by the State Pollution Control Board in their Consent to Establish should be effectively implemented.
- (ii) Necessary forestry clearance under the Forest (Conservation) Act, 1980 for an area of 4.07 ha forestland shall be obtained before starting mining operation in that area. Till such time mining activities shall be restricted to an area of 64.354 ha for which in principle forestry clearance has been obtained from the Ministry on 03.10.2005.
- (iii) Top soil should be stacked properly with proper slope at earmarked site(s) with adequate measures and should be used for reclamation and rehabilitation of mined out area.
- (iv) Over burden shall be stacked at earmarked dump site(s) only and should not be kept active for long period. The total height of the dump(s) should not exceed 45 m in three stages of 15 m each, keeping overall slope of the dumps below  $28^{\circ}$ . The proponent shall carry out slope stability study and submit report to the Ministry. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be taken for stabilization of the dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on six monthly basis.
- (v) Trace Metals such as Ni, Co, As, and Hg should be analysed in dust fall and soil samples for at least one year during summer, monsoon and winter seasons. If concentrations of these metals are found below the standards then with prior approval of MOEF this specific monitoring could be discontinued.
- (vi) Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilized for watering the mine area, roads, plantation etc. The drains should be regularly desilted and maintained properly.

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Garland drain (size, gradient and length) shall be constructed for both mine pit & waste dump and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material

Storm water return system should be provided. Storm water should not be allowed to go to the effluent treatment plant during high rainfall / super cyclone period. A separate storm water sump for this purpose should be created.

- (vii) Dimension of retaining wall at the toe of OB dumps and benches within the mine to check run-off and siltation should be based on the rainfall data.
- (viii) Effluents containing  $\text{Cr}^{+6}$  shall be treated to meet the prescribed standards before reuse/discharge. Effluent Treatment Plant should be provided for treatment of mine water discharge and wastewater generated from the workshop and mineral separation plant.

Run off from OB dumps and other surface run off should be analysed for  $\text{Cr}^{+6}$  and in case its concentration is found higher than the permissible limit the water should be treated before reuse/discharge.

- (ix) Separate impervious concrete pits for disposal of sludge shall be provided for the safe disposal of sludge generated from the mining operations.
- (x) The project proponent shall ensure that the quality of decanted effluents from the tailing pond conform to the prescribed standards before discharge.
- (xi) The project proponent shall explore the possibility to reduce concentration of  $\text{Cr}^{+6}$  in the tailing pond in consultation with an expert scientific institution like NEERI.
- (xii) Plantation shall be raised in an area of 33.02 ha including green belt in an area of 6.56 ha by planting native species around ML area, OB dumps, roads, around worked out area etc. in consultation with local DFO/ Agriculture Department. The density of the trees should be around 2000 plant species per hectare.
- (xiii) Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year - pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground Water Authority and Regional Director Central Ground Water Board.
- (xiv) The project proponent shall carry out regular monitoring of groundwater quality in all the 14 wells. The frequency of monitoring in 8 wells where concentration of  $\text{Cr}^{+6}$  is within permissible limits, will be quarterly while in the remaining 6 wells it will be on monthly basis.

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- (xv) The project authorities should meet water requirement of the peripheral village(s), especially, if the village wells go dry due to mine de-watering.
- (xvi) Permission from the competent authority should be obtained for drawal of ground water for domestic use.
- (xvii) Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, CGWB.
- (xviii) Drills should be wet operated or operated with dust extractors.
- (xix) Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.
- (xx) The voids created at the end of mining shall be converted into water body with shallow depths not exceeding 30 m. The higher benches of the excavated void/mine pit shall be terraced and plantation done to stabilise the slopes. Peripheral fencing shall be done along the excavated area.
- (xxi) 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. The vehicles should be covered with a tarpaulin and shall not be overloaded.
- (xxii) Consent to operate should be obtained from SPCB before enhancing production capacity of the mine.
- (xxiii) Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.
- (xxiv) 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 & Forests.
- (ii) No change in the calendar plan including excavation, quantum of mineral chromite and waste should be made.
- (iii) Conservation measures for protection of flora and fauna in the core & buffer zone should be drawn up in consultation with the local forest and wildlife department.
- (iv) Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO<sub>2</sub> & NO<sub>x</sub> monitoring. Location of the stations should be decided based on the meteorological data, topographical features, and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board.

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- (v) Data on ambient air quality (RPM, SPM, SO<sub>2</sub> & NO<sub>x</sub>) should be regularly submitted to the Ministry including its Regional office at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.
- (vi) Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.
- (vii) Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.
- (viii) Industrial waste water (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 19<sup>th</sup> May, 1993 and 31<sup>st</sup> December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.
- (ix) 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.

- (x) 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.
- (xi) The project authorities should inform to the Regional Office located at Bangalore 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 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 and its Regional Office located at Bhubaneswar.
- (xiii) 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.
- (xiv) A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation was received while processing the proposal.



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


(xvi) The project authorities should advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven 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 & Forests at <http://envfor.nic.in>. and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneshwar.

3. The Ministry or any other competent authority may stipulate any further condition for environmental protection.


4. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance.

5. 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.

  
(SATISH.C.GARKOTI)  
Additional Director(S)

**Copy to:**

1. Secretary, Ministry of Mines, Government of India , Shastri Bhawan, New Delhi.
2. Secretary, Department of Steel and Mines, Government of Orissa, Secretariat, Bhubaneshwar.
3. Secretary, Department of Environment, Government of Orissa, Secretariat, Bhubaneshwar.
4. Secretary, Department of Forest, Government of Orissa, Secretariat Bhubneshwar.
5. Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-32.
6. Chairman, Orissa Pollution Control Board, Parivesh Bhawan, A/118, Nilkanthanagar, Unit VIII, Bhubneshwar-751012.
7. Chief Conservator of Forests, Regional Office (EZ), Ministry of Environment and Forests, A-31, Chandrasekharpur, Bhubaneshwar - 751 023.
8. Member Secretary, Central Ground Water Authority, A2, W3 Curzon Road Barracks, K.G. Marg, New Delhi-110001.

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9. Chief Controller of Mines, Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur-440 001.
10. ~~T.A.~~Collector, Jajpur District, Orissa.
11. EI Division, Ministry of Environment and Forests, New Delhi.
12. Monitoring File.
13. Guard file.
14. Record file.