



To,
Addl. PCCF,
MoEF, Eastern Regional Office,
Government of India,
A/3 Chandrasekharpur,
Bhubaneswar-751023.

Ref No. - JMB/115/ 002574 /2014

November 20, 2014


Re: Half Yearly Compliance Report of the conditions of Environmental Clearance issued by Ministry of Environment & Forest, New Delhi, for Kalimela Open Cast Project, Tata Steel Limited Under Jamadoba Colliery, Dhanbad for the period April'14 to September'14.

Dear Sir,

We are enclosing herewith compliance report for the EC granted vide letter no.- J-11015/252/2005-IA. II(M), Dated-22nd June 2006 issued by Ministry of Environment & Forest, New Delhi. This is for your kind perusal.

Thanking you,

Yours faithfully,


General Manager (Jharia)
Email I.D.- skumar.singh@tatasteel.com

Encl: As above.

Copy to : Mr. A.N. Sharan , Addl. PCCF, MoEF, Regional office, Forest Colony, Van Bhawan, Doranda, Ranchi.

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**HALF YEARLY COMPLIANCE REPORT
(PERIOD: APRIL'14-SEPTEMBER'14)**

OF

**OCP KALIMELA PROJECT
UNDER JAMADOBA COLLIERY**



TATA STEEL LIMITED, JHARIA DIVISION

**P.O.- JAMADOBA, DIST. - DHANBAD,
STATE- JHARKHAND, PIN CODE – 828112.**

**ENVIRONMENTAL CLEARANCE GRANTED VIDE LETTER NO. - J-11015/252/2005-
IA.II(M) DATED- 22ND JUNE 2006 ISSUED BY GOVT. OF INDIA, MINISTRY OF
ENVIRONMENT & FOREST, NEW DELHI.**

A. SPECIFIC CONDITIONS:

- (i) All the conditions stipulated by SPCB in their NOC no N-35 dated 31.01.2005 are to be implemented effectively.
- **Being complied with.**
- (ii) The bund/embankment shall be designed taking into account highest flood level, based on past data, in the Damodar River/ Dungri Jore so as to guard against mine inundation.
- **The embankment (550 mts length, 6 mts top width and 22 mts base width approx.) has already been constructed in the year 2009, along Dungri Jore. The HFL (Highest flood line) of Damodar river is way below the surface level of open cast mine hence bunds across the river is not necessary. The photos have been provided in earlier compliance reports.**
- (iii) Topsoil should be stacked properly with proper slope at earmarked sites and should not be kept active and shall be used for reclamation and development of green belt.
- **The top soil has been stacked in an area of 1.60 ha. Amount of top soil generated till now is 4.10 lakh cum. No further top soil will be generated as coal mining activity has been ceased. The top soil is being preserved to be used in future for reclamation purpose.**
- (iv) OB should be stacked at earmarked external OB dumpsite(s) within ML area and shall be a maximum height of 60m only and consist of benches of 10m each. The ultimate slope of the dump shall not exceed 28°. Backfilling shall begin at the end of 3rd year in the decoaled area. Monitoring and management of existing reclaimed dumpsites should continue until the vegetation becomes self-sustaining. Compliance Status should be submitted to the MOEF and its regional office at Bhubaneswar on yearly basis.
- **OB is being stacked within ML area at an area of 12 ha approx. Till now about 24.08 lakh cum of OB generated has been stacked with an approximate height reached of 50 mts. The other conditions are being followed as well. This OB will be used for backfilling the mine pits as part of our mine closure plan.**
- (v) 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, green belt development, etc. The drains should be regularly desilted and maintained properly.

Garland drains (size, gradient and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of slit material.

- **Catch drain and siltation ponds have been constructed to arrest the debris, silt and sediment flows from OB dumps. Collected water is being used for watering mine area, roads & plantation. Total length of catch drains required is 2200 mts. Garland drains (about 1790 mts) have been completely constructed around the mine site to ensure runoff water during rainy season is properly drained off). Since mine area is not going to expand, no additional garland drains are required as of now.**



- (vi) Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.
- **Retention wall (or Toe wall) of about 2200 mts. exists around the dump area to check run-off and siltation.**
- (vii) The effluents from the coal washery shall be treated to prescribed norms before discharge from the lease.
- **There is no separate coal washery for OCP Kalimela. We have a central coal washery for Jamadoba group of mines, about 1.5 kms away, which has a closed water circuit system to maintain zero discharge.**
- (viii) Crushers at the CHP should be operated with high efficiency bag filters, water sprinkling system should be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc.
- **There is no separate CHP for OCP Kalimela. The existing CHP for Jamadoba group of mines already has adequate measures in place such as water sprinkling system and dry fog system.**
- (ix) Drills should be wet operated.
- **Wet drilling is being practiced.**

- (x) Controlled blasting should be practiced only during daytime with use of delay detonators. The mitigative measures for control of ground vibration and to arrest the fly rocks and boulders should be implemented.
- **There will be no further blasting as coal mining activity has been ceased.**
- (xi) Area brought under afforestation includes reclaimed external OB dump (12.89 ha), backfilled area (25.15 ha), along ML boundary, along roads (0.45 ha) and in undisturbed area (1.14 ha) within the lease area by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.
- **We have planned to utilize the OB to backfill the mine voids. The whole area will be reclaimed and plantation will be done in future. The existing external OB dump area will also be utilized for plantation purpose.**
- (xii) A progressive closure plan shall be implemented by reclamation of quarry area of 25.15 ha which shall be backfilled and afforested by planting native plant species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha. The balance 1.10 ha of decoaled area shall be converted into a water reservoir, the upper benches of which shall be gently sloped and stabilized and reclaimed with plantation.
- **Backfilling has started and area of about 1 Ha has been backfilled. The mine closure plan has been prepared and submitted to MOC, Delhi for approval. The same will be informed to your office as soon as it will be approved.**
- (xiii) Conservation Plan for endangered species, if any, found in and around the project area shall be formulated, if required, in consultation with the State Forest and Wildlife Departments.
- **Not Applicable.**
- (xiv) The company shall obtain prior approval of CGWA/ CGWB Regional Office for use of groundwater if any, for mining operations.
- **Not applicable.**
- (xv) Regular monitoring of groundwater level and quality should be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity should be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected should be submitted to the Ministry of Environment & Forest and to the Central Pollution Control Board quarterly within one month of monitoring.

- The ground water level in the wells of surrounding area is given below: (Readings are in mts.) The pre-monsoon (May) and post-monsoon (August) well water level data are given below-

Area	May'14	Aug'14
	In mtrs	
Near Shiv Mandir Old Kalimela	0.91	0.80
Near Kalimela Kalimandir	2.98	2.89
Joria Par No. 7	4.78	4.57
Lower Dungari Basti	2.13	2.04
Upper Dungari Basti	1.12	1.0
Pattiya basti	1.12	1.5
Jamadoba	1.06	0.95
Jorapokhar	3.96	2.5

The ground water quality Report for the month of Aug'14.

S. No.	Location	Sample Parameter			
		pH	Temp ⁰ C	TDS, mg/l	Total Hardness (as CaCO ₃),mg/l
1.	Near Shiv Mandir Old Kalimela	8.0	31	865	431
2.	Near Kalimela Kalimandir	8.0	30.5	555	385
3.	Joria Par No. 7	8.5	30	302	275
4.	Lower Dungri(well)	8.0	30	455	302
5.	Upper Dungri Basti(well)	8.5	30	395	315
6.	Pattiya basti	8	31	650	250
7.	Jamadoba	6.8	29	650	399
8.	Jorapokhar	8	30	850	405

The ground water quality Report for the month of May'14.

S. No.	Location	Sample Parameter			
		pH	Temp ⁰ C	TDS, mg/l	Total Hardness (as CaCO ₃),mg/l
1.	Near Shiv Mandir Old Kalimela	7.5	30	820	410
2.	Near Kalimela Kalimandir	7.9	29	550	375
3.	Joria Par No. 7	8	29.5	310	241
4.	Lower Dungri(well)	7.5	30	438	298
5.	Upper Dungri Basti(well)	6.9	29	375	310
6.	Pattiya basti	7.3	29	635	245
7.	Jamadoba	7.5	30.5	715	385
8.	Jorapokhar	7.0	30	865	398

(xvi) The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource. The project authorities should meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.

- **There are many ponds in the leasehold area which act as an artificial groundwater recharge. These ponds are regularly cleaned and maintained by Tata Steel. The water requirement of nearby villages is being met. Regular supply of drinking water is done via tankers and pipelines as part of our CSR activities.**

(xvii) ETP should also be provided for workshop, coal washery and CHP wastewater.

Oil and grease trap has been provided at the garage (workshop) present in the mine premises which will help to separate out the oil and grease from the effluent generated while washing and the separated oil and grease are then sold to registered recyclers. There is no separate Washery and CHP at OCP Kalimela.

(xviii) R&R shall not be less than the norms laid down by the State Government and shall be completed within a specified time-frame.

- **It will be strictly followed.**

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

- **It has been prepared by our consultant M/s-Gondwana Geotech Pvt Ltd, Ranchi and submitted for approval to MOC, Delhi.**

(xx) Consent to operate shall be obtained before starting mining operations.

- **Consent to operate has been obtained from JSPCB vide letter ref. No. D-2118(C) dated- 14/07/2014 valid upto 30.09.2014.
We have applied for renewal of the consent vide letter ref. No.- S&E/ENV/CAP/01/490/2014 dated- 29.05.2014 for the period 01.10.2014 to 30.09.2015.**

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 forest.

- **It is being strictly followed. Dumper-shovel combination is being used for mining.**

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

- **It is being strictly followed.**

(iii) Four Ambient Air quality monitoring station should be established in the core zones as well as in the buffer zone SPM, RSPM, SO₂ and NO_x monitoring location of the stations should be decided based on the metrological data & topographical features & environmentally & ecologically sensitive targets in consultation with SPCB.

- **The Air quality monitoring stations are:**

- (i) **New Village Colony, Jamadoba (CORE ZONE)**
- (ii) **Jamadoba Office Area (CAAQMS) (BUFFER ZONE)**
- (iii) **Digwadih 12 No. Colony (“)**
- (iv) **6&7 Pits Kalimandir area (“)**

(iv) Fugitive dust emissions (SPM & RSPM) from all the sources should be controlled regularly monitored & data recorded properly. Water spraying arrangement on haul roads, wagon loading, and dump trucks (loading & unloading) points should be provided & properly maintained.

- **There is adequate water spraying arrangement on haul roads, loading and unloading points. The fugitive dust emissions are monitored regularly and data are as follows:**

Unit	Month	SPM ($\mu\text{g}/\text{M}^3$) Limit-150 $\mu\text{g}/\text{M}^3$
Kalimela Open Cast Project	July'14	49.86
	Apr'14	91.14
	Jan'14	81.47

(v) Data on ambient air quality (SPM, RSPM,SO_x & NO_x) should be regularly submitted to the Ministry including its regional office at Bhubaneswar and to the SPCB & CPCB once in six months.

- **Air Quality Report as per Air Quality Standard for Coal Mines in Jharia Coalfield:**

Monitoring location: New Village Colony (located about 200 mtrs from mine pit)

These are the average monthly values measured:

Month	SPM: 24 Hrly Limit-700µg/M³	RPM: 24 Hrly Limit-300µg/M³	Sox: 24Hrly Limit-120µg/M³	NOx: 24 Hrly Limit-120µg/M³
April'14	269.80	139.72	11.81	16.88
May'14	271.04	140.40	12.22	17.45
June'14	273.24	142.27	12.15	18.13
July'14	271.59	140.34	11.48	17.21
Aug'14	267.8	139.2	14.5	16.1
Sept'14	262.5	138.5	14.5	15.7
Minimum	262.50	138.50	11.48	15.70
Maximum	273.24	142.27	14.50	18.13
Average	269.33	140.07	12.78	16.91

- **Ambient Air Quality Report (Location: At Colonies about 400-800 mtrs from mine)**

Month	PM_{2.5} :24 Hrly Limit of 60 µg/m³
April'14	40.5
May'14	38.6
June'14	34.5
July'14	32.25
Aug'14	32.47
Sept'14	34.70
Minimum	32.3
Maximum	40.5
Average	35.5

It can be seen that all the values are within permissible limits. Adequate control measures like water spraying have already been adopted.

- (vi) Adequate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations of HEMM etc. All should be provided with Ear Plug/Muff.
- **Regular noise survey is being conducted in the work environment. Workers engaged in mine have been provided with ear plug/Muff. Regular maintenance of vehicles is done in the garage.**

The Leq (sound level) of the work place measured during April'14 and September'14 are given below (Working Hours: 8Hrs):

Location	Exposure hours	Minimum value, dB (A)	Maximum value, dB (A)	Norms
Near Water Tanker	8 hrs	81.7	82.3	Warning limit is 85dB "A". Danger limit is 90dB "A" for 8(eight) hours of working.
Near Volvo Tippler	8 hrs	77.5	80.8	
Near Actros Tippler	8 hrs	80	83	
Dozzer	8 hrs	84.5	85	
Pay Loader	8 hrs	84	85	
Pocklen Haundai	8 hrs	80.6	82	
Work shop & Office Site	8hrs.	53	57.8	

- (vii) 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 19th May 1993 and 31st December 1993 or as amended from time to time before discharged. Oil and Grease trap should be installed before discharge of Work shop effluent.
- **The mine water is collected in settling tanks where the suspended solids settle down to give clear water. Oil and grease trap has been provided at the garage (workshop) present in the mine premises which will help to separate out the oil and grease from the effluent generated while washing.**

The quality of the final clear water in the settling tank is given as below:

Month	pH	TSS	TDS	BOD	COD	Oil/Grease
April'14	7.8	20	583	3.6	34	0.48
May'14	7.8	20	529	4.1	39	0.48
June'14	7.6	27	615	4.3	42	0.57
July'14	7.8	23	649	4.7	39	0.73
Aug'14	7.5	21	613	4.7	38	0.97
Sept'14	-	-	-	-	-	-
Minimum	7.5	20	529	3.6	34	0.48
Maximum	7.8	27	649	4.7	42	0.97
Average	7.7	22.2	597.8	4.28	38.4	0.646

- (viii) Vehicular emissions should be kept under control and regularly monitored. Vehicle used for transporting the mineral should be covered with tarpaulins and optimally loaded.
- **All vehicles are tested and have pollution control certificates issued by the Government. Hence it is regularly monitored. Mineral transportation from mine to washery has been ceased.**
- (ix) Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the SPCB.
- **We have a fully equipped Environment Cell Laboratory with qualified personnel. Laboratory has been recognized and registered for R&D work by the Jharkhand State Pollution Control Board vide letter ref no. B-3922, Dated-30.08.2012.**
- (x) Personnel working in dusty area should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspect. Occupational Health Surveillance programme of the worker should be under taken periodically to observe any contraction due to exposure to dust and to take corrective measures if needed.
- **Persons working in dusty area have been provided with dust masks & have been given awareness training on safety& health aspects. Regular PME (Periodic Medical Examinations) are being done.**
- (xi) 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 Company.
- **We have a separate Environmental Management Cell with qualified personnel (Head (Safety & Evt) - Rajnish Jain; Manager (Env.) - Mukesh Kumar Prasad)**
Reporting of Environmental Cell is directly to General Manager of the Division.
- (xii) Funds earmarked for environmental protection measures should be kept in separate A/C and should not be diverted for other purposes. Year wise expenditure should be reported to this ministry and its regional office at Bhubaneswar.

- **The Environment Cell has a separate fund for Environmental protection measures and for complying with legal requirements. The annual environmental expenditure for the financial year 2013-14 of Jharia division (comprises of 5 underground collieries, 1 open cast coal mine, 2 washery projects & 1 Power plant) is given below:**

S.No	Category	Activity	Expenditure (in lakhs)
1.	Land Management	Stowing activities i.e filling of U/G voids for surface protection and prevention of subsidence.	2687.667
2.	Land Management	Fire Control measures (Fire/Isolation Stopping and Nitrogen plant)	197.33172
3.	Land Management	Goaf Filling activities.	26.947
4.	Soil & Water Conservation	Drain repairing and maintenance, settling tank maintenance jobs	41.48122
5.	Land Management	Horticultural activities including green belt development	14.5
6.	Water Management	For making potable water in water treatment plant	150
7.	Water & waste management	Tailing management, ash handling & pond management	324.26
8.	Water Management	Mechanical dewatering	22.35
9.	Air Quality Management	Dust Suppression, dust extraction, water spraying, ESP maintenance	27.65
10.	Land management	Maintenance of Garland drains and retention wall	7
11.	Environment Management	Housekeeping	27.21
12.	Environment Awareness	Programmes(Awareness, World Environment Day)	0.40
13.	Miscellaneous	Cess & Consent Fee	0.55
		Total*	3527.35
		(*This cost excludes the manpower cost, stores cost, contract cost, power cost.)	Lakhs

(xiii) The regional office of this ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities shall extend full co-operation to the officer of regional office by furnishing the requisite Data/ information/ monitoring report.

- **Being complied. All data being furnished in the compliance report and during inspection.**