



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

Ref No. - JMB/115/ 001080 /2015

May 23, 2015

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 October'14 to March'15.

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.

TATA STEEL LIMITED

Jharia Collieries Jamadoba 828 112 Dhanbad India
Tel 91 326 2320263/2320265/2320267 Fax 91 326 2320268
Regd. Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001
Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

**HALF YEARLY COMPLIANCE REPORT
(PERIOD: OCTOBER'14 - MARCH'15)**

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 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 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 post-monsoon (November) and winter (January) well water level data are given below-

Area	Nov'14	Jan'15
	In mtrs	
Near Shiv Mandir Old Kalimela	4.33	1.56
Near Kalimela Kalimandir	3.04	3.10
Joria Par No. 7	5.2	5.57
Lower Dungari Basti	7.72	7.94
Upper Dungari Basti	3.04	2.96
Pattiya basti	2.51	2.70
Jamadoba	3.20	3.0
Jorapokhar	7.62	5.25

The ground water quality Report for the month of Nov'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	6.5	25	475	455
2.	Near Kalimela Kalimandir	6.6	26	482	480
3.	Joria Par No. 7	6.9	25	668	418
4.	Lower Dungri(well)	7.0	25	461	300
5.	Upper Dungri Basti(well)	7.2	24	396	310
6.	Pattiya basti	6.8	25	450	355
7.	Jamadoba	6.4	26	498	396
8.	Jorapokhar	6.5	24	830	365

The ground water quality Report for the month of Jan'15

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	6.5	23	580	348
2.	Near Kalimela Kalimandir	6.5	24	856	306
3.	Joria Par No. 7	7	26	450	388
4.	Lower Dungri(well)	7.0	25	461	300
5.	Upper Dungri Basti(well)	7.2	24	396	310
6.	Pattiya basti	6.9	25	496	288
7.	Jamadoba	6.7	24	407	306
8.	Jorapokhar	6.2	26	499	272

(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. All the villages in the leasehold areas will be connected with water pipeline connection. In FY15, about 16200 metres of raw water pipeline and 23 water tanks (each having capacity of 4500 litres) were provided for domestic usage in villages with approx. expenditure of Rs. 52 lakhs). In FY16, 5500 mtrs. pipeline connection & 10 water tanks covering 11 villages is proposed to be provided with an estimated expenditure of Rs. 62 lakhs.**

(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 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.

- **Complied. All mining excavation activities are terminated since Nov'14.**

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

• **Complied. All mining excavation activities are terminated since Nov'14.**

(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 ambient air quality monitoring stations are:**

- 1) New Village Colony, Jamadoba (CORE ZONE)
- 2) Jamadoba Office Area (CAAQMS) (BUFFER ZONE)
- 3) Digwadih 12 No. Colony (BUFFER ZONE)
- 4) 6&7 Pits Kalimandir area (BUFFER ZONE)

(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.

• **Since transportation on haul roads, loading and unloading has been stopped due to closure of mining operation, hence prominent fugitive dust emission sources are eliminated now. The fugitive dust emissions were monitored in Oct'14 and data is as follows:**

Unit	Month	SPM ($\mu\text{g}/\text{M}^3$) Limit-150 $\mu\text{g}/\text{M}^3$
Kalimela Open Cast Project	Oct'14	56.51

(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.

Ambient air quality monitoring is being done on regular interval at identified locations. The report of ambient air quality is attached as Annexure-I.

(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.

It is being complied. Since the operation is closed now, all prominent sources of noise are eliminated.

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

Location	Exposure hours	Minimum value, dB (A)	Maximum value, dB (A)	Norms
Near Water Tanker	8 hrs	80.8	82.7	Warning limit is 85dB "A". Danger limit is 90dB "A" for 8(eight) hours of working.
Near Actros Tippler	8 hrs	79.5	79.8	
Near Actros Tippler	8 hrs	79.8	81.0	
Work shop & Office Site	8 hrs.	57.0	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
Oct'14	7.3	25	598	4.7	45	1.12
Nov'14	7.3	15	573	4.2	37	0.93
Minimum	7.3	15	573	4.2	37	0.93
Maximum	7.3	25	598	4.7	45	1.12
Average	7.3	20	586	4.5	41	1.03

(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. No mineral transportation from mine to washery has been taking place since the cease of project (Nov'14).**

(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 & Eenvt) - Rajnish Jain; Manager (Envvt.) - 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) was 35.27 crores. The annual environmental expenditure for the financial year 2014-15 will be submitted in next compliance report.**
- (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.**

Annexure- I

Ambient Air & Groundwater Analysis Report

TATA STEEL LIMITED, Jamadoba Group							
Ambient Air Analysis Report For The Month Of October'2014							
Sampling Station	Latitude/ Longitude	Date of Sampling	Weather Condition	PM ₁₀ (µg/M ³)	PM _{2.5} (µg/M ³)	SO ₂ (µg/M ³)	NO _x (µg/M ³)
Jamadoba Office Area (CAAQMS)	23°42'15.8" N/ 86°24'10.2" E	05.10.14	Clear	132.7	57.8	26.8	26.6
Digwadih 12 No. Colony	23°41'42.2" N/ 86°24'45.3" E	20.10.14	Clear	105.2	55.4	19.5	18.6
New Village Colony, Jamadoba	23°41'51.1" N/ 86°23'19.9" E	06.10.14	Clear	98.2	48.5	14.8	18.5
6&7 Pits Kalimandir area	23°43'15.5" N/ 86°24'12.1" E	28.10.14	Clear	71.2	39.5	15.7	17.6

Ambient Air Analysis Report For The Month Of November'2014							
Sampling Station	Latitude/ Longitude	Date of Sampling	Weather Condition	PM ₁₀ (µg/M ³)	PM _{2.5} (µg/M ³)	SO ₂ (µg/M ³)	NO _x (µg/M ³)
Jamadoba Office Area (CAAQMS)	23°42'26.0"N/ 86°23'59.4"E	08.11.14	Clear	90.6	55.8	24.4	26.6
Jamadoba Colliery Mine Office Area	23°41'42.2" N/ 86°24'45.3" E	11.11.14	Clear	108.5	57.5	22.5	24.6
New Village Colony, Jamadoba	23°41'51.1" N/ 86°23'19.9" E	24.11.14	Clear	99.6	51.5	21.6	24.2
6&7 Pits Colliery Mine Office Area	23°43'15.5" N/ 86°24'12.1" E	12.11.14	Clear	74.6	43.5	18.7	20.5

Ambient Air Analysis Report For The Month Of December'2014							
Sampling Station	Latitude/ Longitude	Date of Sampling	Weather Condition	PM ₁₀ (µg/M ³)	PM _{2.5} (µg/M ³)	SO ₂ (µg/M ³)	NO _x (µg/M ³)
Jamadoba Office Area (CAAQMS)	23°42'26.0"N/ 86°23'59.4"E	17.12.14	Clear	94.9	54.0	22.1	51.0
Jamadoba Colliery Mine Office Area	23°41'42.2" N/ 86°24'45.3" E	08.12.14	Clear	110.4	59.2	18.2	23.6
New Village Colony, Jamadoba	23°41'51.1" N/ 86°23'19.9" E	04.12.14	Clear	113.5	59.5	16.5	22.0
6&7 Pits Colliery Mine Office Area	23°43'15.5" N/ 86°24'12.1" E	11.12.14	Clear	95.5	55.5	18.5	20.5

Ambient Air Analysis Report For The Month Of January'2015

Sampling Station	Latitude/ Longitude	Date of Sampling	Weather Condition	PM ₁₀ (µg/M ³)	PM _{2.5} (µg/M ³)	SO ₂ (µg/M ³)	NO _x (µg/M ³)
Jamadoba Office Area (CAAQMS)	23°42'26.0"N/ 86°23'59.4"E	18.01.15	Clear	106.2	48.0	18.1	43.7
Jamadoba Colliery Mine Office Area	23°41'42.2" N/ 86°24'45.3" E	14.01.15	Clear	112.5	58.8	19.5	22.6
New Village Colony, Jamadoba	23°41'51.1" N/ 86°23'19.9" E	06.01.15	Clear	105.7	59.2	17.5	21.8
6&7 Pits Colliery Mine Office Area	23°43'15.5" N/ 86°24'12.1" E	12.01.15	Clear	98.5	58.5	19.2	22.6

Ambient Air Analysis Report For The Month Of February'2015

Sampling Station	Latitude/ Longitude	Date of Sampling	Weather Condition	PM ₁₀ (µg/M ³)	PM _{2.5} (µg/M ³)	SO ₂ (µg/M ³)	NO _x (µg/M ³)
Jamadoba Office Area (CAAQMS)	23°42'26.0"N/ 86°23'59.4"E	05.02.15	Clear	104.2	52.3	53.9	62.9
Jamadoba Colliery Mine Office Area	23°41'42.2" N/ 86°24'45.3" E	17.02.15	Clear	105.5	56.8	23.5	27.7
New Village Colony, Jamadoba	23°41'51.1" N/ 86°23'19.9" E	27.02.15	Clear	102.8	58.2	21.5	26.5
6&7 Pits Colliery Mine Office Area	23°43'15.5" N/ 86°24'12.1" E	26.02.15	Clear	97.5	57.5	23.5	27.5

Ambient Air Analysis Report For The Month Of March'2015

Sampling Station	Latitude/ Longitude	Date of Sampling	Weather Condition	PM ₁₀ (µg/M ³)	PM _{2.5} (µg/M ³)	SO ₂ (µg/M ³)	NO _x (µg/M ³)
Jamadoba Office Area (CAAQMS)	23°42'26.0"N/ 86°23'59.4"E	15.03.15	Clear	112.0	33.2	24.3	28.8
Jamadoba Colliery Mine Office Area	23°41'42.2" N/ 86°24'45.3" E	26.03.15	Clear	109.5	58.7	22.5	26.5
New Village Colony, Jamadoba	23°41'51.1" N/ 86°23'19.9" E	04.03.15	Clear	107.5	59.0	19.5	25.5
6&7 Pits Colliery Mine Office Area	23°43'15.5" N/ 86°24'12.1" E	30.03.15	Clear	98.5	58.0	20.5	26.0