

ODISHA POWER GENERATION CORPORATION LTD.

(A Government Company of the State of Odisha)
CIN: U40104OR1984SG001429

1b Thermal Power Station

Banharpali, Dist.: Jharsuguda, Odisha - 768 234, India

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Ltr.No. ITPS. 3943/we/ Date-28.05.2016

To

The Advisor

Ministry of Environment Forests & Climate Change, Govt.of India

Eastern Regional Office, A/3, Chandrasekharpur,

Bhubaneswar-751023.

Sub: Environmental Status Report of ITPS (2 x 210 MW), Banharpali, Dist: Jharsuguda for the period October 15 – March 16.

Ref: Environmental Clearance No. 14/13/83-EM-2, Dt. 27 Sept.1984.

Sir,

Enclosed please find herewith the Environmental Status report of IB Thermal Power Station (2x210 MW), Banharpali, Dist: Jharsuguda for the period from October 2015 to March 2016 for kind perusal. The soft copy of the report in PDF has been sent through e- mail to mef@ori.nic.in.

Enclosures:

Annex -I- Compliance status of Environmental Conditions

Annex -II- CREP Compliance Status.

Annex-III-Ash Utilization report

Annex-IV-Maximum and Minimum of monitoring reports.

Annex- V-Plantation status

Thanking you.

Sincerely yours,

Alok Mukherjee

Director (Operations)



ANNEXURE-I
ODISHA POWER GENERATION CORPORATION LTD
IB THERMAL POWER STATION (2X210MW)
COMPLIANCE STATUS OF THE ENVIRONMENTAL CONDITIONS
Period – October 2015 – March 2016

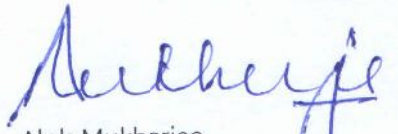
Sl. No.	Environmental Conditions	Compliance Status
1.	AIR POLLUTION	
i.	A common stack height of not less than 200 mtr should be provided for two units of 210 MW. Similarly, for other two units a common chimney of 200-mtr height should be provided.	<p>A bi flue common Stack of height 220 meters has been provided for U#1&2.</p> <p>Other two units, i.e. U#3&4 of capacity 660 MW each are under construction with twin flue common stack of height 275 meter.</p>
ii.	ESP of having operational efficiency of not less than 99.7% should be provided and extra fields made part of the design. The efficiency of ESPs should be monitored and recorded. Adequate training should be given to the persons engaged in the operations and maintenance of ESPs.	<p>ESP of operational efficiency 99.82 %(design value) has been provided for existing Units with provision of extra fields.</p> <p>ESP internals both for Unit #1 & Unit #2 have been repaired during annual overhauling every year. Routine maintenance practice has been followed for ensuring healthiness of ESP to ensure the efficiency > 99.7%. Stack monitoring is being carried out on weekly basis to ensure ESP output efficiency.</p> <p>ESP retrofitting job for both the units has been taken up to achieve revised particulate emission norm of 100 mg/Nm³ by 30th April 2016.</p> <p>The renovation work of existing ESPs of Unit 1 and its retrofitting with parallel field addition was completed in the month of February 2015 through BHEL. BHEL is still working to resolve few technical problems of the renovated and retrofitted ESPs. After successful fine-tuning and resolving the technical problems, the PG test will be carried out.</p> <p>For Unit No-2, the same renovation and retrofitting job almost is in last stage of completion.</p> <p>Emission of both the units remain well within the earlier stipulated norm of 150mg/Nm³. Maximum, minimum and average emission report for the period October 2015 to March 2016 is enclosed as Annexure- IV.</p>

iii.	Emission and ambient air quality monitoring should be done after the commissioning of the units and data recorded, and should not exceed the standards set by the Central and State Pollution Control Boards.	<p>Stack monitoring has been taken up through online continuous emission monitoring system for parameters SPM, SO₂, NO_x & CO. Besides, offline test has also been conducted through grab sampling by calibrated portable Stack monitoring kit & Flue gas analyzer on weekly basis. Online particulate emission results are being reported to OSPCB & CPCB through RTDAS and additionally offline emission results for Particulate matter, SO₂, NO_x & CO is being also reported to OSPCB, CPCB & CEA on monthly basis.</p> <p>Five permanent offline ambient air-monitoring stations are installed in & around ITPS in consultation with OSPCB, out of which 03 no stations are stationed in Industrial zone & 02 no in Residential zone. Ambient air monitoring has been done regularly for parameters PM₁₀, PM_{2.5}, SO₂, NO_x & Noise.</p> <p>In addition to the above, online ambient air monitoring has been done in locations through 04 AAQMS, out of which two are stationed inside plant & two are in residential area to monitor PM_{2.5}, PM₁₀, SO₂, NO_x & CO. Real time data is being transmitted to the OSPCB & CPCB server.</p> <p>Offline monitoring reports are being sent to SPCB, CPCB & CEA every month. Half yearly maximum, minimum and average reports are being sent to MoEF &CC, Govt. of India, Eastern Regional Office. Ambient Air Quality & Emission data for the period from October 2015 to March 2016 is enclosed as Annexure-IV.</p>
iv.	Adequate space for FGD plant should be part of the design so that they could be installed if required at a later stage.	Adequate space provision has been kept for installation of FGD in later stage as per requirement.
v.	Dust suppression/ control equipment should be installed in wagon tipping area, transfer points, crushers etc.	<p>Installed pre-sprinkling and dust suppression control systems for Track Hopper Coal unloading station, cyclone type dust extractors for Coal Crushers and dust suppression systems for transfer points.</p> <p>In order to introduce more effective dust control systems in CHP and so also to achieve more efficient plant operation by the way of reducing moisture content in feed coal, action has been initiated to install dry fog dust suppression systems.</p>
2.	WATER POLLUTION.	
i.	Closed cooling system for condensers should be provided instead of once-through cooling system as proposed.	Closed cooling system for condensers and auxiliary equipment is provided.

ii.	Liquid effluents emanating from the different plants such as DM plant, Boiler blow down, Ash pond/ dyke, sewage etc. should be properly treated as per the standards stipulated by the State Pollution Control Board.	<p>The plant has been reusing its liquid effluents in its different process after necessary treatment since 28.06.2008. This is in compliance to SPCB's consent condition to reuse all liquid effluents. The details of reuse processes are-</p> <ul style="list-style-type: none"> ▪ Domestic sewage of Plant has been discharged to soak pits after treatment in septic tanks. Domestic sewage of Colony and Hospital has been treated in STP and treated effluent is being reused for watering the Green Belt and Park at ITPS. ▪ No effluent from ash pond is discharged except seepage. Treated ash water is re-cycled 100% for reuse as make up water in wet ash handling system after necessary treatment. ▪ CW blow down effluent is being reused as makeup water in wet ash handling system. ▪ Boiler and Turbine effluents are being reused as ash handling make up after necessary treatment. ▪ D.M Plant regeneration effluent is being reused as Cooling System make up. <p>Around 99% of the liquid effluent being generated has been recycled and reused inside plant. Only the gravity sand filter back wash effluent and CT drift water has been discharged after meeting effluent quality norm. However the back wash water quality matches the drinking water grade in all respect except suspended matter. The water is settled in a zig-zag flow path & by the time it reaches the final discharge point (about 500 m. away), it gets almost clear which has been confirmed from routine quality checks. The quantity & quality of discharge is being reported to OSPCB on monthly basis. Feasibility study for recycling and reuse of these two effluents has been carried out. It has been planned to recycle the CT drift water by August 2016 however gravity sand filter backwash water will be treated in the upcoming OPGC expansion project in its ETP for complete reuse, which is expected to come under operation by the end 2017. The same had been communicated to OSPCB vide letter no. 361(A) dt. 09.07.15.</p> <p>In abnormal or emergency situation if any liquid effluent discharge situation arises, the industry ensures that the discharge meets the effluent discharge norms by treatment through the process of neutralization, settling, equalization, natural cooling and oil removal.</p>
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iii.	Hot water coming from the condenser should be properly cooled so as to ensure to keep the temperature of the receiving surface water as per the standard stipulated by the state Board.	Hot water coming from the condenser is being cooled through cooling towers & recycled through in close loop. There has been no hot water discharge coming from the condenser.
3	SOLID WASTE MANAGEMENT.	
i.	Fly ash and bottom ash should be collected in the ash dykes/ponds. The supernatant water should not contain suspended matters more than 100ppm. Dry disposal of fly ash should also be planned including the disposal in abandoned mines after mixing with the OB.	<p>Part of fly ash is being collected from Storage Silo in dry form for ash utilization in manufacturing of ash bricks/blocks, asbestos and in land reclamation. Part of Pond Ash also is being utilized for Ash Dyke and road/embankment construction. Balance quantity of fly ash is collected regularly in Ash pond by wet form. Wet ash from operating Ash Pond A has been transferred to Ash Pond B for dry ash mound making. The ash mounds are thoroughly compacted, capped with soil and then grass turfed on entire ash surface. Ash Dykes stability & safety study has been carried out by IIT, Madras.</p> <p>From ash pond no effluent is discharged out side except the seepage water. Treated ash water after maintenance of turbidity and suspended matter is being re-cycled 100% for reuse as make up water in wet ash handling system. OPGC is in continuous follow up with MCL for getting abandoned mines for back filling or dry disposal of fly ash by mixing with OB since long back but so far MCL has not permitted to do so. OPGC seeks support from MoEF & CC in this regard.</p>
ii.	<p>Green belt should be raised on the ash disposal areas filled by fly ash to check the dispersion of fly ash in to the air.</p> <p>Additional land (pvt. Land) should be acquired for compensatory afforestation.</p>	<p>Grass & weeds grow naturally on the dry ash disposal area i.e. on the ash mound & additionally grass turfing has been maintained on the bund slope for prevention of ash dispersion. In operating ash pond, dry ash surfaces maintained wet and flooded with ash water to prevent ash dispersion. Provision also made for water spraying during dry seasons.</p> <p>Tree plantation on the slope of the dyke has been restricted by State Pollution Control Board due to the risk involved to the dyke in from of tree root channeling effect. Thereafter the tree planted earlier on the ash dyke were removed for maintaining the safety of the ash dykes.</p> <p>Compensatory afforestation has been done by OPGC over 260 Ha of non-forest land in Deogarh, through Forest Department, Government of Odisha.</p>
iii.	Trees plantation work should be taken up all around the Thermal Power Plant. The species to be planted may be decided in consultation with the Forest Department.	Adequate number of trees of local species has been planted all around ITPS. Species are selected consulting Forest Departments. More than 34% of the plant area is now covered with Green belt and high density trees. Plantation activity is also being taken up every year. Detail plantation status is enclosed – Annexure – V.

iv.	Efforts should be made to utilize fly ash in bricks, blocks, building materials etc.	OPGC is having own fly ash brick plant for manufacturing of fly ash bricks. Apart from that OPGC has been providing fly ash free of cost to interested brick plants. OPGC also initiated ash transport subsidy for registered local Ash brick plants. Detail ash utilization status is furnished in Annexure III.
v.	A comprehensive re-settlement package of rehabilitation of displaced families should be made including providing of job to at least one person per family, apart from giving cultivable land for land to those who were possessing the same.	This was already complied earlier as per our status report no ITPS/241/WE/21.01.2001 submitted in MoEF regional office, Bhubaneswar.
vi.	A master plan should be prepared taking into account the requirement of power plant, township, fuel requirement, human settlements, etc. in consultation with District authorities.	It was compiled at the time of Project Construction & Commissioning stage during the period, year 1989 to 1995.
vii.	Timber required for the project should be procured through the Forest Corporation and not by private contractor/ dealers and the former should not abrogate this responsibility by contracting the supply out and adding its handling charges. If the corporation is not equipped to handle this themselves the project authorities should negotiate the best terms, price and environment-wise with contractors by obtaining bids.	It was compiled at the time of Project Construction & Commissioning stage during the period, year 1989 to 1995.



Alok Mukherjee
Director (Operations), OPGC Ltd

ANNEXURE-II

ODISHA POWER GENERATION CORPORATION LTD IB THERMAL POWER STATION (2X210MW) COMPLIANCE STATUS OF CREP GUIDELINES Period October 2015 – March 2016

Sl. No	CREP Guidelines	Compliance Status/ Steps initiated
1	Implementation of Environmental standards (emission & effluent) in non-compliant power plants	Not applicable being compliant plant.
2	For existing thermal power plants, a feasibility study shall be carried out by CEA to examine possibility to reduce the particulate matter emissions to 100mg/Nm ³ .	No such feasibility study report or guideline so far received from CEA. However, as per stipulation by State Pollution Control Board, Odisha, ESP retrofitting job was taken up to achieve revised particulate emission norm, 100 mg/Nm ³ by 30 th April 2016 for both the units. Unit#1 retrofitting job completed & post commissioning fine tuning is in progress and the retrofitting of Unit#2 ESP is in the verge of completion.
3	New /expansion power projects to be accorded environmental clearance on or after 1.4.2003 shall meet the limit of 100 mg/Nm ³ for particulate matter	As per point no. 2, although being an old unit commissioned in the year 1995, the retrofitting job had been taken up for its Unit No1 and Unit No 2. The condition with particulate matter limit 50mg/Nm ³ is incorporated in the expansion units (2 x 660MW) under construction.
4	Development of SO ₂ and NO _x emission standards for coal based plants by Dec.2003	Compliance by other agency/ authority.
	- New/expansion power projects shall meet the limit w.e.f 1.1.2005	Not applicable
	- Existing power plants shall meet the limit w.e.f. 1.1.2006	Not applicable
5	Install/activate opacity meters/continuous monitoring systems in all the units by December 31, 2004 with proper calibration system	Continuous emission monitoring system has been installed since June, 2005. Calibration is being done by comparing offline test results tested through calibrated Stack Monitoring Kit.
6	Development of guidelines/standards for mercury and other toxic heavy metal emissions by December 2003	Compliance by other agency/ authority.
7	Review of stack height requirement and guidelines for power plants based on micro meteorological data by June 2003	Compliance by other agency/authority. However, the stack height requirement i.e. 220 meter is fulfilled.
8	Implementation of use of beneficiated coal as per GOI Notification	The matter has been taken to Coal Supplier, Mahanadi Coal Fields Ltd. for supply of washed coal.

9	Power plants will indicate their requirement of abandoned coal mines for ash disposal & Coal India/MOC shall provide the list of abandoned mines by June 2003 to CEA.	The requirement was indicated before MCL but no such abandoned mine is allotted to OPGC so far. On continuous pursuance from OPGC and with the support of MoEF, Regional Office, Mahanadi Coal Fields Ltd(MCL) had given clearance in the month of May 2007 for back filling of OPGC ash in Lilari OCM void from July 2009. Based on that permission, OPGC had taken immediate step for EIA and feasibility study engaging CIMFR, Dhanbad. But in the month of February 2008, the permission was withdrawn unilaterally by MCL on the ground that the anticipated life of Lilari Mine is extended for ten more years. Since then, OPGC is perusing time and again to MCL to provide any other Mine void near OPGC site. In a high level meeting with MCL on 9 th February 2011, MCL has agreed to give in principle clearance to OPGC for back filling in Belpahar OCM. This has not happened so far. OPGC seeks support from MoEF & CC in this regard.
10	Power Plant will provide dry ash to the users outside the premises on uninterrupted access to the users within 06 months.	Dry fly ash is being provided to the interested users. Availability of adequate quantity of dry ash has been ensured to meet the users demand. OPGC has made 1200 MT/Day dry ash collection facility which is about 40% of its total ash generation quantity.
11	Power Plant should provide dry fly ash free of cost to the users.	Complied. It is being provided free of cost. As per OSPCB direction transportation subsidy to the local registered brick manufacturing industry @ Rs.150 per ton has been initiated.
12	State P.W.Ds/ Construction and Development agency shall also adhere to the specification/schedules of C.P.W.D. for ash/ ash based products utilization.	Compliance by other agency/ authority.
13	(i) New plant to be accorded Environmental clearance on or after 1.4.2003 shall adopt dry fly ash extraction or dry disposal system or medium (35 to 40%) ash concentration slurry disposal system or Lean phase with 100% ash water recirculation system depending up on site specific environmental situation.	The requirement is incorporated in the design for its expansion project (Unit 3 & 4) under construction stage. 100% dry fly ash extraction system and High Concentration Slurry Disposal system with 100% ash water recirculation is envisaged.
	(ii) Existing plant shall adopt any of the systems mentioned in 13(i) by December 2004.	Complied. 40% dry ash collection facility has been provided. 100% ash water is being re circulated for reuse in ash handling.
14	Fly ash Mission shall prepare guide lines/ manuals for fly ash utilization by March 2004.	Compliance by other agency/ authority.
15	New plant shall promote adoption of clean coal and clean power generation technologies.	Condition has been considered for expansion project in shape of Supercritical technology for its expansion project under construction stage.


 Head (EHS) 28-5-2016
 C.K. Bhatnagar

ANEXURE-III
ODISHA POWER GENERATION CORPORATION LTD
IB THERMAL POWER STATION (2x210MW)


ASH GENERATION & UTILIZATION STATUS AT ITPS Period: October 2015 – March 2016								
Ash Generation in M.T	ASH UTILIZATION in M.T							
	Captive (Ash bricks, blocks)	Land Reclam ation	Asbestos	Cenosphere	Outside Ash Brick Plants	NH/SH Road construct ion	Ash Dyke raising	Total Utilization
585849	252	37613	5004	44.38	10638	240	105090	158881
% Utilization- 27.12								

Reasons for not meeting the Ash Utilization Target

1. Due to remote location of plant (pit head power plant located in rural area) there is very limited scope of ash utilization in brick manufacturing. Moreover the ash brick acceptance level remains low. With best effort the utilization in this particular area does not exceed more than 2%.
2. Big stone quarry or low lands are not available in the locality.
3. Export of Ash is not feasible since the site is located at a distance of 500 KM from the nearest Port. Transportation from site to nearest port through rail or any other means is not feasible.
4. Major road construction activities are taking place near Jharsuguda. The demand from these activities are met by other thermal power plants very close to that road construction area.
5. No scope available in major ash utilization area i.e Cement Plant Use. Only one cement plant in the locality i.e. Ultratech Cement Ltd. offtakes entire quantity of ash for cement manufacturing from their sister concern Hindalco Power, Hirakud.
6. Even though the industry is putting its best effort to get allotment of a mine void for ash utilization from the coal supplier Mahanadi Coal Fields Ltd., there is no allotment of mine void so far. It may kindly be note that ITPS being the only pit head power plant in this locality, mine void filling is the most feasible utilization means for achieving 100% utilization.

Actions to overcome the challenges


1. Transportation subsidy of Rs 150/- per ton has been processed for enhancing ash utilization in the areas of manufacturing of brick & fly ash based products.
2. Special initiative has been taken to identify low land in nearby vicinity.
3. Action initiated to utilize 2 lakh MT ash in nearby NH 200 renovation activity.
4. Action initiated to utilize ash in OPGC expansion project MGR line construction.


 Head (EHS) 28-5-2016
 W. P. B. B.

ANNEXURE-IV								
ODISHA POWER GENERATION CORPORATION LTD								
IB THERMAL POWER STATION								
ENVIRONMENTAL MONITORING REPORTS								
Period- October 2015 to March 2016								
A. STACK EMISSION								
PARAMETER	NORM	STACK 1			NORM	STACK 2		
		MAX.	MIN.	AVE.		MAX.	MIN.	AVE.
SPM (mg/Nm3)	100	134	115	124	100	142	105	127
SOx (PPM)	NA	529	458	494	NA	572	487	518
NOX (PPM)	NA	217	146	183	NA	204	161	179
B. AMBIENT AIR QUALITY								
PARAMETER	NORM		MAX.		MIN.		AVE.	
PM 10 (ug/m3)	100		92		56		75	
PM 2.5 (ug/m3)	60		39		24		32	
SO2 (ug/m3)	80		16		7		11	
NO2 (ug/m3)	80		31		14		22	
C. AMBIENT NOISE LEVEL								
	Industrial Noise Level, db (A)			Residential Noise Level, db (A)				
	Day Time		Night Time	Day Time		Night Time		
Norm	75		70	55		45		
Minimum	64		61	40		36		
Maximum	72		69	52		40		
Average	68		65	45		38		
D. LIQUID EFFLUENT QUALITY								
Parameters	UNIT	STANDARD	RESULT					
			MAX.	MIN.				
Temp (In)	0 C	T(O) - T(I) = <5 0C	26.1	22.4				
Temp (Out)			29.4	25.1				
pH at 25 oC	NA	5.5-9.0	7.8	7.3				
Chloride as Cl	mg/ltr	1000max	57.5	19.9				
D. Phos as P	mg/ltr	5.0 max	0.5	0.3				
O & G	mg/ltr	10.0 max	1.4	0.7				
TSS	mg/ltr	100 max	64	19				
TDS	mg/ltr	2100 max	351	149				
Res Chlorine	mg/ltr	1.0 max	0	0				
BOD	mg/ltr	30 max	4	3				
COD	mg/ltr	250 max	43.5	27				

Note: As per Environmental Clearance condition vide letter dt. 27.09.1984, the stack emission norm was stipulated as 150 mg/ Nm³. In the year 2013, during renewal of consent, OSPCB stipulated the emission norm, 100 mg/ Nm³. Accordingly, OPGC started implementing the ESP retrofitting project with parallel path addition through BHEL and the work is at advanced stage of completion. Unit#1 ESP retrofitting is completed and taken into service. BHEL has been working to resolve certain technical problems involved with this retrofitting. Once they successfully resolve the problem, PG test of the ESPs will be taken up. For Unit#2, parallel path ESP erection job is in advanced stage of completion after completing renovation of existing ESPs.

It may kindly be noted that our units are quite old and the retrofitting work is voluminous, high budget oriented and involved with long unit shutdown, hence the retrofitting job has been taking considerable time.


 U.K Pahi
 Head (EHS)

ANNEXURE-V

**ODISHA POWER GENERATION CORPORATION LTD
IB THERMAL POWER STATION (2X210MW)**

STATUS OF PLANTATION.

- Total Plant & Colony Area - 1227.5 acres
- Greenbelt & High Density Trees- 420 acres
- % Greenbelt & High Density Trees- 34.2

Break Up-

Plant:

Green belt & Plantation area of Plant	-270 acres
Total Plant area	-797.5 acres
% of Green belt & Plantation area	-33.9

Colony-

Green belt & Plantation area of Colony	-150 acres
Total Colony area	-430 acres
% of Green belt & Plantation area	-34.9

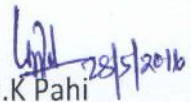
In addition to above plantation at ITPS, Compensatory afforestation has been done by OPGC over 260 Ha of non-forest land in Deogarh, through Forest Department, Government of Odisha.

- Total trees planted- 3, 01,494 Nos.
- Total trees survived- 2, 16, 632 Nos.
- % of Survival- 71.85

Plantation & Sapling distribution:

Year	Planted	Sapling distributed
2015-16	700	4480

Besides, a nursery of 25000 capacity has been developed.


U.K Pahi
Head (EHS)