O/C

ODISHA POWER GENERATION CORPORATION LTD.
(A Joint Venture of Govt. of Odisha & AES Corp. USA)

Ib Thermal Power Station
Banharpali, Dist. : Jharsuguda, Odisha - 768 234, India
Plant Manager : (+916645) 222253, Fax : 222230
Factory Manager : (+916645) 222214, Fax : 222225
Finance : (+916645) 289-214/312
P&A : (+916645) 289-223/225
Purchase : (+916645) 289-354/355/356, Tele Fax : 289355
Contract Cell : Tele Fax : (+916645) 289317
Warehouse : (+916645) 289-701, Fax : 222204

OPGC
Power for Progress

Letter No. ITPS/5224/WE
September 28, 2020

To
The Member Secretary
State Pollution Control Board, Odisha
Paribesh Bhawan, A/118
Nilakantha Nagar, Unit-VIII
Bhubaneswar-751012.

Sub: **Environmental Statement for ITPS (2x660MW) for the period from 1st April 2019 to 31st March 2020.**

Sir,

Enclosed please find herewith the Annual Environmental Statement in (Form-V) for Ib Thermal Power Station (2x660 MW), Banharpali, Jharsuguda for the period from 1st April 2019 to 31st March 2020 for kind perusal.

Thanking you

Sincerely yours,

Director (Operations), OPGC

Encl: Environmental Statement

Copy to-
Regional Officer, State Pollution Control Board, Plot No. 370/5971, At - Babubagicha (Cox Colony), St. Marry Hospital Road, Post – Industrial Estate, Jharsuguda for kind information.

OPGC

ENVIRONMENTAL STATEMENT

Odisha Power Generation Corporation Ltd
Ib Thermal Power Station

Banharpali, Jharsuguda

(2 x 660 MW)

PERIOD FROM 1st APRIL 2019 TO 31st MARCH 2020

OPGC

(FORM – V)

(See Rule 14)

Environmental Statement Report for the Financial Year ending the 31st March, 2020.

PART – A

i.	Name and address of the Owner/Occupier of the Industry	: **Mr. Alok Mukherjee** Odisha Power Generation Corp. Ltd. Ib Thermal Power Station Banharpali, Jharsuguda Pin Code- 768234 Site Office-Ph.06645-222220, Fax. 222230 Corp. Office- 06742303754, Fax. 2303755
ii.	Production Capacity	: 1320 MW (2X660 MW)
iii.	Year of Establishment	: Unit#3-03.07.2019 Unit#4-21.08.2019
iv.	Date of last Environment Statement submitted	: First Submission after Commissioning
v.	Industry category	: Thermal Power Plant

PART – B

(Water and Raw Material Consumption)

(All values indicate Annual consumption) in m^3/day

Sl.	Description	2018-2019	2019-2020
(I)	Gross Energy Generation (MU):	Not Applicable	3852.248
(ii)	Total Water consumption:	Not Applicable	28835
(iii)	Ash disposal make up, Process NEBD:	Not Applicable	-
(iv)	Cooling, Spraying, Boiler Feed:	Not Applicable	25951
(v)	Domestic*: (Excluding Township)	Not Applicable	Reported under OPGC-1 (2x210 MW)
(vi)	Process, EBD	Not Applicable	2883

Sl No	Name of the product	Process Water Consumption per Unit of Product Output	
		2018-19	2019-20
01	Electricity	Not Applicable	2.73 KL/MWH

NB: The Sp. Water consumption was higher than previous due to lesser generation.

Name of Raw Material	Name of the product	Consumption of Raw Material unit of output			
		2018-19		2019-20	
Coal	Electricity	Total Consumption	Not Applicable	Total Consumption	2906481MT
		Specific Consumption	Not Applicable	Specific Consumption	0.754 Kg/KWH
Start-up Fuel Oil (LDO)	Electricity	Total Consumption	Not Applicable	Total Consumption	5521.23 KL
		Specific Consumption	Not Applicable	Specific Consumption	1.433 ml/KWH

PART – C
Pollution discharged to Environment and Pollution Level

PERIOD- April 2019 TO March 2020								
STACK EMISSION								
PARAMETER	NORM	STACK #3			NORM	STACK #4		
		MAX.	MIN.	AVE.		MAX.	MIN.	AVE.
SPM (mg/Nm^3)	100	48	37	45	100	48	36	41
SO_2 (mg/Nm^3)	600	2038	1588	1875	NA	2468	1595	1954
NO_x (mg/Nm^3)	600	959	296	437	NA	998	195	391

AMBIENT AIR QUALITY								
PARAMETER	NORM	INDUSTRIAL			NORM	RESIDENTIAL		
		MAX.	MIN.	AVE.		MAX.	MIN.	AVE.
PM_{10} ug/m3	100	96	15	70	100	95	12	65
$PM_{2.5}$ ug/m3	60	58	8	37	60	57	6	35
SO_2 (ug/m3)	80	18	10	14	80	14	7	9
NO_x (ug/m3)	80	34	11	22	80	28	10	19

STP WATER QUALITY				
PARAMETER	NORM	MAX	MIN	AVE.
pH	6.5 – 9.0	7.47	6.81	7.2
TSS, mg/ltr	100	66	18	52.5
BOD(3 days at 27°C), mg/ltr	30	23	6	13.5
COD, mg/ltr	250	96	21	60
Total Nitrogen(as N)	10	9.3	1.4	5.7
Ammonical Nitrogen(as NH_3-N)	50	8.9	1.2	4.5
Total coliform	--	440	6	264.5
Fecal coliform	<1000	240	63	145.3

AMBIENT NOISE in dB(A)			
INDUSTRIAL		RESIDENTIAL	
MAX.	MIN.	MAX.	MIN.
DAY TIME			
NORM			
75		55	
72	66	48	39
NIGHT TIME			
NORM			
70		45	
70	63	43	36

OPGC has installed continuous emission monitoring system for both the stacks, four continuous ambient air quality monitoring stations and one continuous effluent monitoring station for round the clock monitoring and control of emission/pollution parameters. These stations are connected to SPCB & CPCB servers through real time data acquisition and transmission facility. The plant has achieved zero effluent discharge from December'18 onwards and till December'18 only 1 % effluent had been discharged after meeting the norms.

PART – D
HAZARDOUS WASTES

(As specified under Hazardous wastes/management & Handling Rules, 2008)

A. From Process:

Hazardous Waste Types	2018-19				2019-20			
	Opening stock	Generation	Sold/ Disposed	Balance	Opening stock	Generation	Sold/ Disposed	Balance
Used oil/Spent oil a. Used Lub. Oil : KL b. Used Grease: MT c. Used Transformer Oil:KL	NA	NA	NA	NA	**Nil** a. 0 KL b. 0 MT c. 0 KL	**1 KL** a. 1 KL b. Nil c. Nil	**Nil** a. Nil b. Nil c. Nil	**1 KL** a. 1 KL b. Nil c. Nil
Sludge contaminated with oil: KL	NA	NA	NA	NA	**Nil**	**Nil**	**Nil**	**Nil**
Spent ion exchange resin, MT	NA	NA	NA	NA	**Nil**	**Nil**	**Nil**	**Nil**
Waste Residue Containing Oil					**0**	**1 MT**	**Nil**	**1 MT**
Used batteries(Nos.)	NA	NA	NA	NA	**Nil**	**Nil**	**Nil**	**Nil**

B. From Pollution Control Facilities: No generation

PART – E

SOLID WASTES

A. Ash:

Solid Wastes (Ash):	Total Quantity (MT)	
	2018-19	2019-20
From Process	Not Applicable	246745 MT (Bottom Ash)
From Pollution Control Facilities	Not Applicable	986979 MT (Fly Ash)
Quantity Utilized	Not Applicable	213978 MT
Disposed in Ash Pond	Not Applicable	1019746 MT

Reasons for variation from the target

1. Since the plant is situated in a remote location (pit head power plant located in rural area) there is very limited scope of ash utilization in brick manufacturing. More ever utilization in this particular area cannot exceed more than 2% to 3%.

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 (Expansion of Sambalpur Rourkela Sate Highway No-10 & Expansion of Sambalpur National Highway No-42). The ash demands for these activities are met by other thermal power plants, close to the road construction areas. However, we have supplied around 8830 MT of ash in the last financial year for construction of road.

5. No scope available in major ash utilization area i.e. Cement Plant use for production of PPC cement. Only one cement plant is available in the vicinity i.e. M/s Ultratech Cement Ltd. M/s Ultratech off takes entire quantity of ash for cement manufacturing from its sister concern i.e. from M/s Aditya Aluminium (Lapanga).

6. Considering OPGC plant's location (Pit Head), mine void back filling of ash is the only means of utilization by which OPGC can achieve 100% ash utilization. The steps so far are as follows.

i. There was progress on mine void allotment in the year 2006. With the support from Regional Office, MoEF and SPCB, MCL has consented to allot Lilari mine void to OPGC. Subsequently, in July 2007, MCL accorded consent for taking up EIA & Feasibility Study for back filling in the void based on which OPGC engaged CIMFR to conduct the studies in October 2007. During the course of the EIA study, the consent given to OPGC was withdrawn by MCL unilaterally vide their letter No MCL-3185/13.02.2008 stating "the life of Lilari Mine is extended with ten more years". Thereafter, OPGC has been pursuing MCL time and again involving regulatory as well as Govt. to reconsider the withdrawal or consider allotting any other mine void near to OPGC site but there has been no progress.

ii. State Pollution Control Board, Odisha made a proceeding on 05.06.10 for backfilling of OPGC ash in BOCM Mine void of MCL as an alternative solution against allotment of Lilari Mine void but no initiative has been taken so far from MCL side.

iii. MCL has also been directed repeatedly by OPGC Chairman & Principal Secretary, Energy, Govt of Odisha, managing Director and Director (Operation) but no positive response has so far been received from MCL.

iv. In a meeting held on 24.01.2011 with Principal secretary Energy, Govt. of Odisha, CMD, MCL has given consent to give principal approval for back filling BOCM mind void but the same has not been done, so far.

v. In response to the letter of Director (Operation), OPGC, dtd.24.08.2013 on the subject, Director (Tech. P&P), MCL negated the request on the ground of BOCM expansion towards dip slide and no scope to back fill ash in running mine even though OPGC proposed for a partition bund to separate

vi. In a high-level meeting held on 13.12.2013 under the Chairmanship of Chief Secretary, GoO,

of Environment & Forest, GoO. The said directions were for taking expeditious steps on this front. However, there has not been any progress as yet.

vii. In a letter dated 10.08.2020 OPGC had again requested Director Technical for allotment of BOCM mine void, however the request was turned down stating various technical causes.

However, OPGC is still working on high priority to pursue MCL, involving Government & other agency to get newly allotted nearest mine void to fulfill this important regulatory obligation.

Efforts made by OPGCL to Maximise Utilisation of Fly-Ash:

1. OPGCL has installed its own Fly-Ash brick plant with production capacity of 10,000 bricks per day, and steps have been made for all the bricks that are produced being utilised in all the ongoing and upcoming construction activities of OPGC.
2. Further, not only is OPGCL utilizing the Fly-Ash generated from its own Project in its own brick plant, OPGCL is also supplying Fly-Ash to 10 (ten) ash brick plants, which are located in and around the site of OPGCL's Project.
3. In order to further incentivise these brick plants to utilise the Fly-Ash from OPGCL's Project, OPGCL has extended a subsidy of Rs 150 per MT for use of Fly-Ash at its cost. However, ash utilization in brick manufacturing is limited to 2-3 % due to poor market demand.
4. Another avenue for Fly-Ash utilization which OPGC has explored is use in major road construction activities undertaken close to Jharsuguda or beyond Jharsuguda. The Fly-Ash demands for these activities are met by other TPPs, which are closer to the road construction areas. However, OPGCL still managed to supply 8830 MT of ash for road construction in the FY 2018-19.
5. OPGCL has entered into an agreement with Visveswariya National Institute of Technology, Nagpur ("**VNIT**") to devise technological advancements for enhancing ash percentage up to 90% in production of bricks and for geopolymeric use of ash in road construction.
6. Transportation subsidy of Rs 150/- per MT has been extended by OPGCL for enhancing ash utilization in areas of manufacturing of ash brick, other Fly-Ash-based products, cement/asbestos manufacturing & road construction.
7. OPGCL has been conducting various ash utilization awareness campaigns in the nearby community by way of street plays, distribution of pamphlets, etc.
8. Strong initiatives have been taken to identify low lying area/ stone quarries in the vicinity. Publications have been made in local newspapers for execution of low land reclamation to supply ash free of cost to the owner for proper utilization of abandoned low land. OPGC now is in process of reclaiming 3 low lying areas of 6.17 acres, 1.4 acres & 1.12 acres for which consent has been taken from State Pollution Control Board, Odisha.
9. Action has been initiated to utilise ash in OPGC expansion project MGR line construction.
10. Working to get mine voids allotment from MCL.
11. OPGCL has ensured that Fly-Ash ash is utilised, instead of precious earth, in the construction of embankment for ash pond as well as raising of bund height for ash pond.
12. OPGCL has also awarded a consultancy order to Centre For Fly Ash Research & Management ("**C-FARM**") headed by Dr. Vimal Kumar (Former Mission Director & Head, Fly-Ash Unit, Department of Science and Technology, Government of India) for scientific and technical advice for obtaining

"Consent for mine void filling with fly ash". C-FARM is continuously deliberating with MCL, as well as with Central Mine Planning and Design Institute, on behalf of OPGCL for allotment of mine void for stowing with ash.

PART – F

Indicate disposal practice adopted for Hazardous as well as solid waste

A. Hazardous Wastes:

OPGC has obtained Hazardous Waste Authorization from OSPCB for Collection & Storage of Hazardous waste valid up to 31st March 2024.

Used Oil and grease are periodically collected from different location within plant & stored at designated place with concrete flooring, shed and secondary containment. The same is then transferred to a central storage area. This is being disposed to recyclers/re-processors having authorization & valid consent from SPCB & registered under CPCB.

Spent resin is temporarily stored in identified impervious pits at ITPS. It has been planned to dispose of the same in CHWTSDF. Discarded chemical containers are mostly returned to the Chemical suppliers against supply of fresh chemical supply. Used oil drums are disposed along with used oil.

E- Wastes are stored in designated places under concrete floor & shed. Inventorization of the same has been made & intimated to OSPCB. OPGC has signed lifetime membership agreement with M/S Ramky Enviro Engineers for disposal of non-soluble, non-incinerable and non-recyclable hazardous wastes at Common Hazardous Wastes Treatment Storage and Disposal Facility (CHWTSDF), Jajpur. OPGC is in discussion with M/s Ramky for disposal of temporarily stored wastes (Spent resins & Asbestos).

New Batteries are procured from Battery suppliers against buy back of used/waste batteries.

B. Fly Ash and Bottom Ash

OPGC has both wet ash disposal system as well as dry ash disposal system at ITPS for handling the main solid waste i.e. fly ash & bottom ash. OPGC-2 (2X660 MW) has 02 Ash Ponds i.e.

i. Tilia Phase-1 Ash Pond-125 Acres
ii. Tilia Phase-2 Ash Pond- 180 Acres

Tilia Phase-1 Ash Pond has started operation since 24.07.2020 and the ash generated from OPGC-2 was disposed in Ash Pond-C of OPGC-1, temporarily till 23.07.2020 through HCSD for Fly Ash & LCSD for bottom ash.

Dry ash collection facility with 8100 MT capacities (3 nos of silos of 2700 MT capacity each) Storage Silo for utilization of dry fly ash by Cement Industries & ash brick/block manufacturing units is already in place. Provisions have been made for evacuation of ash through [illegible]

C. Other Solid Waste of Plant and Colony (Bio-degradable)

Environment Statement

Solid Waste of plant other than Fly Ash & Bottom Ash, like ferrous & non-ferrous scraps are collected regularly from different sites & deposited in the designated scrap yard for selling.

Kitchen waste is collected from Plant Canteen, Colony, Guest House, ITPS Market etc. and segregated as biodegradable and non-biodegradable is being disposed in an eco-friendly manner in a 1.0 Ton Capacity Bio-Gas Plant with zero effluent discharge.

Other biodegradable waste of plant & colony is regularly collected from different places & disposed on OPGC land. Domestic effluent from Plant is disposed through Septic Tanks and Soak Pits and Sewage from colony is treated in 1.0 MLD capacity Sewage Treatment Plant (STP) with zero effluent discharge. Facility for pumping of sewage generated from office buildings to centralized STP at township is under progress. Treated Sewage is reused for watering green belt and also used in Park for horticulture purpose.

D. Bio-medical Waste

OPGC has 18-bedded Hospital at ITPS without any Operation Theatre. Bio-medical waste is mainly non-toxic in nature and the quantity is insignificant. Wastes are treated and disposed following the prescribed method as stipulated in Bio medical waste authorization issued by OSPCB vide letter No 3994 Dated 31.03.2018 & valid till 31.03.2021. OPGC has also obtained Consent to Operate under Water Act from OSPCB vide letter no 15440/IND-I-CON-6658 dated 27.12.2018 and valid till 31.03.2021

E. Plastic waste

Plastic waste is being segregated from Colony Garbage and packed in gunny bags. The gunny bags containing plastics are being stored in a designated place at township. The same is being given to plastic waste recycler. Process has been initiated to dispose the same through co-processing in cement plant of M/s ACC Limited. Formal agreement is already in place for disposal.

OPGC has declared no usage of plastic carry bags in colony and plant area. Regular campaigns are made to restrict the use of plastic carry bags in township and peripheral areas. OPGC has distributed Jute carry bags to all its employees to promote non usage of plastic carry bags.

PART – G

A. Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.

- By adopting appropriate technology, operation & maintenance, monitoring practices and pollution control measures, OPGC has been successful in conserving coal, oil, water & energy through reduce /reuse/recycle

taking place. Specific water consumption remains less than 2.73KL/MWH against the norm of 3.5 KL/MWH

Fuel oil consumption is monitored and controlled with minimum Unit light up periods and reducing number of Unit trips.

consumption is also monitored regularly to reduce its consumption.

- All bricks used for civil maintenance activities inside the plant are of ash bricks.

- Pond ash is being used for ash mound preparation & also for ash dyke height raising, thereby conserving soil for dyke height raising as well as increasing ash pond life.
- LED light and solar panel have led significant conservation of energy in township, as pond and street lighting

B. IMPACT OF POLLUTION CONTROL MEASURES ON COST OF PRODUCTION:

Cost of production reduces due to

1. Process optimization to operate plant with reduced emission and higher efficiency.
2. Conservation of resources used as input (Coal, Oil, Water.)
3. Waste utilization & eco-friendly and cost-effective disposal means (Solid waste and hazardous waste).

The additional investment and the above benefits balance some way by treating the pollution control and mitigation is integrated with overall efficiency of the plant and cost of the production

PART – H

Additional investment proposal for Environmental protection abatement of pollution,

Prevention of pollution

1. Utilization of ash in low lying areas, brick plants/asbestos- 1000 lakh
2. Utilization in Cement Industries-800 Lakhs
3. Tree Plantation/Green belt development- 40 lakh
4. Installation of mist sprayer for dust suppression -6 Lakhs
5. Installation of 2 Nos of 5 Kg/hr capacity incinerator for sanitary waste disposal- 7 Lakhs
6. Tree sapling distribution in the peripheral villages- 1.5 Lakhs
7. Effective Ash dispersion control in Ash Pond at the time of turbulent wind flow- 30 lakh
8. Ash Disposal line replacement to reduce the risk of pipe line failure- 50 lakh
9. Hazardous waste disposal-15 Lakhs
10. Maintenance of online analysers-15 Lakhs
11. ISO 14001:2015 -3 Lakhs
12. Carrying out bird nesting for improvement of biodiversity-10 Lakhs
13. Installation of camera for real time video transmission through RTDAS- 8 Lakhs

OPGC

PART- I

Any other particulars for improving the quality of environment.

- Complying with the directions and conditions of state and central pollution boards.
- Environment Management by establishing ISO 14001:2015 EMS and Global EMS standard.
- Fine tuning of ESPs of both the Units for achieving desired emission level.
- Adequate plantation and greenbelt developed to minimise air as well as noise pollution. Planted approx 3.22 lakh trees. 34.6% greenbelt and plantation exits in and around plant and colony premises
- Water conservation by 100% Ash water recirculation and other effluents recycle & reuse. All the plant effluent is also getting recycled back in process.
- Housekeeping has been given highest priority. Plant & Colony premises are maintained clean all the time. Roads are black turfed to control fugitive emission. Colour coded bins have been provided at all generation points for proper segregation and management of wastes.
- Water, Coal, Oil & Ash leakages & spillages are being controlled at the source itself to maintain clean work place and clean environment.
- Provided HDPE Lining on New Ash Pond (Tilia Phase-1 & Phase-2 Ash Ponds) to minimize water pollution. Ash dykes are extra strengthened to prevent dyke failure.
- Implemented sound wastes management practices.
- Carrying out regular environmental audits by competent auditors and taking timely corrective measures
- Carrying out Annual Hydrogeological study for studying characteristics of aquifers and quality of ground water. The Annual Hydrogeological study is vetted through IIT Madras.

Alok Mukherjee
Director (Operations), OPGC

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Environmental Clearance