

**IV<sup>th</sup> QUARTERLY REPORT OF THE  
OVERSIGHT COMMITTEE**

**IN COMPLIANCE WITH THE HON'BLE  
NATIONAL GREEN TRIBUNAL ORDER  
DATED 14-07-2020**

**IN O.A. 164 / 2018 (ASHWANI KUMAR  
DUBEY VS. UNION OF INDIA & ORS.)**

**IV<sup>th</sup> QUARTERLY REPORT OF THE OVERSIGHT COMMITTEE IN COMPLIANCE  
WITH THE ORDER DATED 14.07.2020 OF NGT IN OA 164/2018 (ASHWANI  
KUMAR DUBEY VS. UNION OF INDIA AND ORS.)**

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**FOURTH QUARTERLY REPORT OF THE OVERSIGHT COMMITTEE IN COMPLIANCE  
WITH THE ORDER DATED 14.07.2020 OF NGT IN OA 164/2018 (ASHWANI  
KUMAR DUBEY VS. UNION OF INDIA AND ORS.)**

1. Hon'ble NGT vide its order dated 14-07-2020 in OA 164 of 2018 ( Ashwani Kumar Dubey vs. Union of India & ors. earlier OA 276 of 2013) was please to order that:

*"11. Since the term of the Committee has expired, further oversight work may be undertaken by a joint Committee of the CPCB with respective State PCB and the District Magistrates. The State PCBs will be the nodal agency for the respective States.*

*12. The newly constituted OC may furnish its reports quarterly by email at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF. First such report may be furnished giving status as on 31.10.2020 by 15.11.2020 with copies to concerned stake holders for their response if any by 30.11.2020."*

2. In compliance to the above order of Hon'ble NGT and findings / recommendations of the various earlier Committees, the new Oversight Committee in its first report had chalked out the various recommendations and gathered the status of compliance / ATR form the various stack holders, mainly Thermal Power Plants, Coal Mines and Railway authorities of the Singrauli region. The first report was submitted before the Hon'ble NGT on 27-11-2020. Likewise the second quarterly report was submitted on 28-3-2021, and the third report was submitted on 15-06-2021.
3. Before the submission of the fourth quarterly report for the quarter ending 31-07-2021 and with the relaxation in Covid 19 restrictions, the Oversight Committee decided to undertake the field visits of the sites of various stakeholders to assess the actual status of implementation by them. The field visits were undertaken on 9-10<sup>th</sup> September, 2021 and a review meeting with the various stakeholders was organized on 11<sup>th</sup> September at the conference hall of M/s Vindhychal Super Thermal Power Station, Singrauli.

4. For the IVth quarter ending 31-07-2021, compliance reports have been submitted by most of the stake holders. The present status of the compliance by the various stake holders as communicated and observations during the field visits is summarized as under:

**A. Thermal Power Plants:-**

- Compliances has been reported by M/s Vindhyachal Super Thermal Power Station of NTPC, M/s Sasan Power Ltd , Jaypee Nigrie Super Thermal Power Plant & M/s Hindalco Industries Ltd Mahan Aluminum Project, &. The reports received from these TPPs are attached herewith as **ENCLOSURE 1 A /VI to ENCLOSURE 1 D /IV** respectively.
- The 100% utilization of fly ash is only being achieved by M/s Jaypee Nigrie Super Thermal Power Plant which has got a cement clinker grinding unit of its own. Other thermal power stations are however far from achieving 100 % utilization of fly ash.
- However the utilization percentage of the fly ash by the TPPs of the Singrauli MP has increased as compared with the last years' fly ash utilization.
- It has been observed that **M/s Vindhyachal Super Thermal Power Station, NTPC Ltd** has completed the dredging of the fly ash, that has flown into the reservoir due to breach of its V1 ash dyke on 06-10-19, from the Rihand reservoir and around 1 lac MT of fly ash has been dredged and dumped into the ash dyke. It has been found that the 2 floating pump houses have been still working to take out any more traces of the fly ash that may be still lying in the reservoir.
- NTPC- Vindhyachal had earlier reported that they had given work order to IIT Roorkee to study the construction of RCC wall around the ash dyke. The report thereafter has been submitted by IIT-Roorkee and has recommended that the construction of RCC wall around the ash dyke is neither feasible from technical point of view nor required as the existing

dykes are found to be structurally safe having adequate margin of structural safety and codal provisions of IS codes. The said report of the IIT Roorkee finds place as one of the annexures of the submissions of NTPC Vindhyachal placed as **ENCLOSURE 1A / IV**.

- NTPC Vindhyachal has also undertaken the structural safety study of ash dykes through IIT Hyderabad and the report is awaited.
- NTPC -Vindhyachal was given permission by MP Pollution Control Board on 30-04-2021 for trial disposal of the fly ash in the abandoned Gorbi mine pit of the NCL @ 2000 TPD. A copy of the same is placed as **ENCLOSURE 2/ IV**. NTPC has thereafter developed the site, installed necessary machinery and started dumping of the fly ash in the acidic water filled mine pit 1 of the Gorbi mines. If this effort of NTPC- Vindhyachal results into a success for the proper disposal, this may turn out to be first of its own kind in the country where acidic water filled abandoned mine is used for the disposal of fly ash. However NTPC should take all due care and precautions, should undertake proper monitoring for any adverse effect on the environment.
- The site for CAAQMS at the Trauma Center of the District Hospital Building could not be completed by NTPC due to Covid pandemic as trauma center was converted into Covid center. NTPC has already procured the CAAQMS equipments along with mercury monitoring sensor in ambient air. Alternate location behind the trauma center has been finalized by the district administration for the CAAQMS to be installed, which will be made functional within two months.
- As far as online continuous mercury monitoring in water is concerned, NTPC informed that the online equipments for water are not readily available in the country. Enquiries were floated by them, however no encouraging response was received. Instead of continuous monitoring of mercury in water bodies like Surya nalla, Rihand reservoir etc., manually monitoring and analysis at least once in a month can be done.

- As far as **M/s Sasan Power Ltd.** is concerned, its compliance submission is placed as **ENCLOSURE 1B/IV**. The TPP is undertaking the works of the height raising of its ash dyke since October 2020, and is raising its slopes with ash, to increase its ash disposal capacity. As the work has not been completed in time compacting, covering the slopes with compacted soil, slope protection works etc, during heavy rains in the region in the month of May- June 2021, big rain cuts appeared on the slopes and huge amount of fly ash and mud has flown into the local nallas reaching the Rihand river. Agriculture fields of the farmers have also been destroyed. The TPP is compensating the farmers for the same through the local administration. However the nallas which have been flooded with ash should also be cleaned by the TPP.
- During the previous accident dated 10-04-2020 in this TPP, in which large volume of fly ash accumulated in illegal manner by the TPP inside its premises had flown away due to breach of the earthen bund, is still lying in thick heaps along the banks of the Gawaiyya nala, reaching Rihand reservoir. It has not be cleared by the TPP till date and has been left unattended on the mercy of the nature that over a period of time it will flow down in the reservoir. The TPP should clean the Gawaiyya Nala of all its ash as well as dredge the ash deposited in the Rihand reservoir at the earliest, within 3 months.
- It is recommended again that agencies like Central Electricity Authority or the Ministry of Power should be entrusted with the responsibility of approving the design and strength of the ash dykes during their construction as well as during the height raising of the ash dykes by the TPPs. Such agencies should also ascertain the physical strength and safety of the dykes during its construction, operation as well as height raising through physical inspections, design verification, quality assurance etc and advice the TPPs for the upkeep of their ash dykes from time to time.

## **B. Coal Mines:-**

- M/s Northern Coalfields Ltd. (NCL) has submitted its compliance. NCL has reported that 10 road sweeping machines are already deployed and procurement of additional 4 machines as promised earlier is still not complete due to pandemic.
- The two railway sidings being operated by NCL namely Spur-I & Spur-II were inspected by the Oversight Committee on 09-09-21. The sidings have been provided with wind breaking wall of GI sheets, sprinklers at suitable locations along with catch drain to collect the runoff. The sprinklers were found to be working satisfactorily. The NCL management has been advised to replace Green net from the upper portion of the wind breaking wall with GI sheets. Also the NCL should construct oil and grease trap along with sedimentation pit of appropriate capacity at the earliest at the end of the catch drain within 3 months time to further strengthen the existing arrangements.
- The main coal transportation road from the Jayant mine Square up to the Shukla Mod ( near its railway sidings) has been found in not so good conditions. Deposits of the coal dust along the road length were found which create muddy conditions during rains and dust during dry seasons. Although water sprinklers by tankers and fogging machines are deployed for dust suppression and manual dust cleaning is also done, the dusty conditions on this road is still murky. NCL has been advised to deploy road sweeping machines under its control for the dust cleaning from this road. Also the shoulders should be strengthened and alternate route for the transportation of the coal shall be explored so that the public transport and coal transport on the same road can be avoided as far as possible. Hence

alternate route shall be developed at the earliest, after completing due process of forest clearance.

- As reported earlier that the railway connectivity / laying of railway track from Block B Gorbi mine which was completed in March 2021 and the permission from DRM for rake loading was awaited, has been made functional w.e.f. 06-06-2021. Now the railway wagons are loaded with coal in the mine itself and coal is transported out through railways. This has stopped the road transportation of coal to the tune of 15000 TPD from the Block B mine to Spur II railway siding situated 15 km away. Thus a considerable amount of dust pollution due plying of 500 trucks on road, their fuel emissions,, chances of road accidents, unloading and loading of coal at railway sidings and consequent dust emissions has been stopped. The information submitted by GM Block B Project NCL, along with photographs is placed as **ENCLOSURE 3/ IV**.
- The construction of additional capacity CHP in the Jayant Mine is under progress and is likely to be completed by July 2022. This will result in coal transportation by road and maximum quantity of the coal can be loaded in the railway wagons from the mine itself.
- The NCL management has again reiterated its difficulties in mixing fly ash in the external over burden of the active mines. They have now awarded the order for a study titled *“Scientific Study of fly ash utilization / dumping/ mixing in OB of the running / active mines of NCL along with its viability and safety aspect of man and machinery”* to IIT BHU on 10-07-2021 which is likely to be completed by December 2021 and thereafter NCL will submit its application before DGMS for utilization of fly ash in mines. The proposal of the IIT-BHU and the work order placed by NCL as attached herewith as **ENCLOSURE 4/ IV**
- Thus the overall compliance submissions of the NCL are placed at **ENCLOSURE 5/ IV** (however some of its attachments namely annexure

2(i)- Brief on fly ash utilization in coal mining projects; annexure 2(ii)- CMPDIL report on Utilisation of Fly Ash in Coal Mines are repetitive and have been already submitted by NCL earlier and has earlier been made part of the Third Quarterly report at pg.81 to pg.235, hence are omitted and not being made part of this report.)

- There have been accidents of sliding of the OB slopes in the Nigahi mines of NCL thereby filling a portion of Mudwani reservoir with mud and stones. Similarly due to the OB slide of M/s Moher & Moher Amlohri coal mines, farm land of the villagers have been with large volume of mud and stones. This indicates that OB slopes are steep and are not properly protected with bunding, gabion wall and garland drains. These mine should improvise the slope protection works and make good the Mudwani dam and compensate the affected farmers and villagers under the supervision of the district administration.
- **C. Railway sidings / Railway Administration:**
- The 5 railway sidings operated by East Central Railways (ECR) and West Central Railways (WCR) are a source of dust pollution in the vicinity and have not taken proper measures for the control of coal dust as per CPCB guidelines titled "*Inventorization of Railway Sidings and Guidelines for their Environment Management- March 2015*".
- The Bargawan railway siding of the WCR was visited by the Committee on 9-9-21. It was found that the siding is around 1460 m long. The WCR has so far made a wind breaking wall of around 100 m length only. The paving / flooring of floor of the railway siding with discarded railway sleepers in approximately 700 m length only. The further work has stopped due to rains. However the progress being made by the WCR administration is very lethargic and slow.

- It is worthwhile to mention that in the matter of OA 87/2017 (CZ) “ Sanjay Namdeo vs. Union of India” Ld. NGT has passed order dated 08-07-2021 and was pleased to direct that:

- “ 1. *Respondents are directed to obtain mandatory permission from SPCB for operation of railway siding and comply with guidelines issued by the Central Pollution Control Board to provide full length, width screen of more than 3.5 mts. of height, at both side of railway siding.*
2. *To install mixed type jet sprinkler appropriately to width to coalistically and during uploading, loading of coal at siding, mixed type mobile water sprinkler for wetting haul roads. Proper drain with adequate capacity setting time shall also be provided for collection and treatment of water generated. The treated water should be recycled to maintain zero discharge. The Respondent Railway Authorities are directed that no untreated water should be discharged in the open land or water bodies.*
3. *There should be provision for re-use of water.*
4. *Green belt shall also be developed in full length along with coal siding by planting trees.”*

- However WCR has not carried out the works of dust control at their sidings so far as per the CPCB guidelines. A GI sheet wall of low height was found erected at the Gajra Behra siding of the WCR, the height of which needs to be raised up to 3.5 m or more along with the installation of water sprinklers, drains treatment and reuse of water as per the orders of the Ld. NGT. No representative of WCR attended the meeting of the Oversight Committee on 11-9-2021, nor any written submission or any time bound action plan for the same has been submitted.

- The Mehdaiya Railway siding of the ECR is by far the most polluted siding in the region, with Mehdaiya Railway station and Mehdaiya town situated adjoining it. Nothing has been done here for the control of dust pollution so far. The submissions by ECR dated 19-8-21, are placed at **ENCLOSURE 6/IV**. The ECR has still sought 6 more months for completing the works of pollution control. The relevant photographs of the railway sidings have been placed as **ENCLOSURE 9/IV** as compilation of site visit photographs.
- As far as use of fly ash in the earthwork / embankment related activities of railway track laying are concerned, ECR have informed that RDSO, which is the technical department of Indian Railways, is working on this issue. Hon'ble NGT can issue suitable directions to RDSO to undertake scientific / engineering studies in this regard to undertake use of fly ash in track laying, which if successful may come a long way in utilization of fly ash for beneficial purposes.

**D. National Environmental Engineering Research Institute (NEERI):**

- NEERI has been entrusted with the studies for the assessment of Environmental Damage Compensation (EDC) due to the ash dyke breach of M/s Essar Power MP Ltd., M/s Vindhyachal Super Thermal Power Station and M/s Sasan Power Ltd.
- NEERI had so far submitted the final EDC report for M/s Essar Power (MP) Ltd amounting to Rs. 91.82 Crores. However the EDC study report for M/s Vindhyachal Super Thermal Power Station and M/s Sasan Power Ltd. has not been submitted even after a lapse of long time.
- NEERI was communicated vide mail dated 09-08-2021 regarding the progress it has made in the EDC reports pertaining to M/s Sasan Power Ltd. that NEERI has prepared the interim draft report based on its earlier samplings and next course of sampling was completed in last week of June 2021. The mail from NEERI has been placed as **ENCLOSURE 7/ IV**.

- On the other hand, in case of NTPC Vindhyachal, the communication between NTPC Vindhyachal and NEERI is placed as **ENCLOSURE 8/IV**, which connotes that the report will be finalized soon by NEERI.
- NEERI can be further requested to speed up the finalization of the EDC report.

**E: DISTRICT ADMINISTRATION / MUNICIPAL CORPORATION:**

- The Municipal Corporation is running 13 RO plants installed by NTPC and NCL in the villages to supply potable water to the nearby residents. One of the sites at Balliyari village was visited by the Committee and the RO plant was found operational and the villagers being benefitted by it. The reject collection pit was also constructed. However it came to the notice that it has not been cleaned for a long time. It is expected that not only the smooth running of the RO plants be ensured by Municipal Corporation, but reject pits should also be cleaned from time to time and the reject be disposed in environmentally sound manner after due testing of its quality.
- Also the laying work of the pipe line for water supply is going on in the city, the villages / localities where RO water is being supplied should be brought under the ambit of piped water supply as soon as possible.
- Municipal Corporation is constructing 3 STPs in the city. However the work of the STPs is being done at a very slow pace. Municipal Authorities informed that the agency to whom these works have been entrusted has defaulted in its progress. The STP situated at Harrahwa was visited by the committee and only 45-50% of work has been completed so far. Similarly the work for laying the sewer line up to the STP is also incomplete. The Municipal Authorities are required to complete the STP works as laid down by Ld. NGT in OA 606/2018 from time to time.

## 5. RECOMMENDATIONS:

Based on the field observations as well as the meeting of the Oversight Committee with the stake holders, following recommendations are being made for further compliance by the various stakeholders:-

### ➤ Thermal Power Plants:-

- A. The thermal power plants shall ensure that 100% fly ash utilization of the fly ash shall be ensured by them as per the Fly ash Notification.
- B. For the achievement of new emission norms, equipments like FGD, SCR/ SNCR etc shall be got installed as per the time lines as notified vide G.S.R. 243(E) dated 31-03-2021.
- C. Fly ash dyke shall be monitored regularly for their strength through some reputed organizations. The design should be safe and timely maintenance should be regularly ensured.
- D. Air borne fly ash from the ash dykes, specifically during summers should be controlled through arrangements of water sprinkling, vegetation and other scientific measure.
- E. NTPC- VSTPS shall ensure that the disposal of the fly ash in the abandoned Gorbi mines shall be undertaken in an environmentally sound manner and necessary checks and balances as well as the monitoring of the surrounding ecosystem shall be ensured as outlined in the permission granted to it by MPPCB.
- F. NPTC- Vindhyachal has reported completion of the dredging of the Rihand reservoir for the removal of the ash flown into it due to breach of its ash dyke. However as a measure of safety, the dredging pumps installed there should be operated regularly to ensure that no more traces of fly ash remain in the reservoir.
- G. NPTC- Vindhyachal has completed the studies of making RCC wall around the ash dyke through IIT Roorkee / IIT Delhi and submitted the report, however the conclusions that construction of RCC wall is neither technically feasible nor viable are subject to the final orders by Ld. NGT.

Similarly studies / action should be initiated for the construction of Ash mounds.

- H. The CAAQMS to be installed by NTPC behind the Trauma Center building of NTPC shall be completed within 2 months. NTPC shall ensure that apart from the regular parameters on line monitoring of Hg in ambient air shall also be ensured.
- I. The regular calibration of the CAAQMS and CEMS installed by the TPPs shall be ensured as per the prescribed frequency of calibration.
- J. As far as online continuous mercury monitoring in water is concerned, instead of continuous monitoring of mercury in water bodies like Surya nalla, Rihand reservoir etc., manually monitoring and analysis at least once in a month should be done and reported by NTPC till appropriate online Hg monitoring equipment is available.
- K. **M/s Sasan Power Ltd.** shall ensure that the huge amount of fly ash and mud that has flown into the local nallas reaching the Rihand river during heavy rains in the region in the month of May- June 2021, shall be cleared from the agriculture fields of the farmers as well as from the local Thargatta nalla, Garra nalla and the Rihand river within in three months time.
- L. Also due to the previous accident dated 10-04-2020 in which large volume of fly ash had flown in the Gawaiyya nala and still lying in thick heaps along the banks of the Gawaiyya nala as well as the ash deposited in the Rihand reservoir at should be cleaned by M/s Sasan Power Ltd. within 3 months, and a photographic and video-graphic record of the same shall be submitted from time to time to show the progress.
- M. Health check up of villagers through mobile medical van be conducted regularly for the detection of the occupational diseases like silicosis, fluorosis etc. and treatment be provided under CSR activities. Record should be maintained and made available to the district health authorities.

➤ **Coal Mines:**

- A. Road sweeping machines procured by NCL shall be deployed to regularly sweep the main Jayant Square- Shukla Mod road so as to keep it clean and minimize dust nuisance. Regular sweeping of the all other internal coal transport roads shall also be undertaken to keep them dust free.
- B. Strengthening of the road side shoulders of the main Jayant Square- Shukla Mod road shall be undertaken within 3 months and road shall be made dust free in all respects.
- C. The NCL should construct oil and grease trap along with sedimentation pit of appropriate capacity at the earliest at the end of the catch drain within 3 months time to further strengthen the existing arrangements.
- D. The alternate route for the transportation of the coal should be developed at the earliest, after completing due process of forest clearance. A time bound action plan in this regard may be prepared and implemented. Help of the District administration to overcome any bottlenecks can be solicited.
- E. Maintenance of railway sidings operated by NCL shall be undertaken as per the guidelines published by CPCB titled *“Inventorization of Railway Sidings and Guidelines for their Environment Management- March 2015”*.
- F. The study being undertaken by the IIT BHU regarding utilization of fly ash in external OB of the mines shall be completed in time and the progress in this regard shall be submitted from time to time.
- G. The construction work of additional capacity CHP in the Jayant Mine is already delayed. The work should be given impetus and is should be completed by March 2022 instead of July 2022, so that coal transportation by road is stopped and maximum quantity of the coal can be loaded in the railway wagons from the mine itself.
- H. The regular calibration of the CAAQMS installed by the mines shall be ensured as per the prescribed frequency of calibration.

- I. The Nigahi coal mine of M/s NCL should clear the OB from the Mudwani dam and M/s Moher & Moher Amlohri captive Coal Mine of M/s Sasan Power Ltd. should clear the OB from the agriculture land of farmers & compensate them within 45 days.
  - J. It has been mentioned by M/s NTPC-Vindhyachal that the Pit 2 & 3 of the abandoned Gorbi mine is being allocated to the other power companies by M/s NCL, which are situated in UP. Since the mines are filled with acidic water and NTPC has started ash filling in Pit 1 on trial basis after a thorough study of various environmental parameters and will be studying the impact of ash filling in long term as well and will be developing facilities for the safe transportation of ash in long term; the allotment of other two pits to other outside parties may result in environmental & safety issues as well as issues related to the “responsibility of whom” in case the environment is adversely affected. Hence no second party shall be allotted the other pits of Gorbi Mines for fly ash filling. The oversight Committee was told by representatives of M/s NCL that they will not go ahead with allotting the mines to any other party. However, M/s NCL should clarify their stand towards the objections raised by M/s NTPC-Vindhyachal.
  - K. Health check up of villagers through mobile medical van be conducted regularly for the detection of the occupational diseases like silicosis, fluorosis etc. and treatment be provided under CSR activities. The manifestation among the mine workers as well as the villagers regarding coal dust related diseases shall be diagnosed and treatment provided. Record should be maintained and made available to the district health authorities.
- **Railway sidings / Railway Administration:**
- A. The railway sidings operated by East Central Railways (ECR) and West Central Railways (WCR) are a source of dust pollution in the vicinity The railway sidings should be operated in accordance with the guidelines

published by CPCB titled *“Inventorization of Railway Sidings and Guidelines for their Environment Management- March 2015”* in compliance with the Ld. NGT order dated 08-07-2021 in OA 87/2017 (CZ) and all necessary dust control devices should be installed within 3-6 months time and necessary consent from MPPCB shall be obtained.

- B.** Ld. NGT can issue suitable directions to RDSO to undertake scientific / engineering studies to undertake use of fly ash in track laying, which if successful may come a long way in utilization of fly ash for beneficial purposes.

➤ **National Environmental Engineering Research Institute (NEERI):**

NEERI has been entrusted with the studies for the assessment of Environmental Damage Compensation (EDC) due to the ash dyke breach of M/s Essar Power MP Ltd., M/s Vindhyachal Super Thermal Power Station and M/s Sasan Power Ltd. NEERI should submit the pending reports in cases of M/s Vindhyachal Super Thermal Power Station and M/s Sasan Power Ltd. at the earliest.

➤ **District Administration / Municipal Corporation:**

- A.** Municipal Corporation Singrauli should ensure that all the villages, where RO water supply was provided, shall be supplied with piped water supply / tankers.
- B.** The STPs being constructed by the Municipal Corporation should be completed at the earliest as per the directions of Hon. NGT from time to time in OA 606 / 2018, else EC shall be levied as directed by Ld. NGT.
- C.** As discussed with the Municipal Officers, the sewage after treatment shall not be discharged in any natural water body. The Municipal Corporation shall prepare a plan for putting the treated effluent for beneficial uses like plantation and horticulture, road cleaning and other industrial uses within 3 months time.

- D. The Health department of the district shall ensure that the citizens with manifestation of occupational diseases like silicosis, fluorosis etc shall be diagnosed and treated. Facilities for the same shall be developed in the newly constructed Trauma center of the district hospital. The health department shall also allot formally the space for the installation of CAAQMS to M/s NTPC- Vindhyaachal with in 15 days.
- E. The domestic use of coal in the households shall be discouraged and LPG connections under Ujjawala Scheme be provided.

Enclosures : As above



(Sunil Kumar Meena)  
Scientist D,  
CPCB Regional Directorate, Bhopal



(H.K. Sharma)  
Director Environment  
MPPCB, Bhopal



(Rajiv Ranjan Meena)  
District Magistrate  
Singrauli (MP)

**Action Points for the Compliance and Expected Actions from NTPC Vindhyachal as on 10-08-2021**

S.No.	Oversight Recommendations in its first quarterly report (THERMAL POWER PLANTS)	Committee	Committee Remarks / Expected Compliance	<b><u>NTPC Vindhyachal submission (as on 10.08.21)</u></b>
A.	The thermal power plants shall ensure that 100% fly ash utilization of the fly ash shall be ensured by them as per the Fly ash Notification.		Plans have been submitted by TPPs for 100% fly ash utilization but barring one TPP (JP Nigrie), others are unable to utilize 100% of fly ash. Hence compliance to be reported on additional steps / efforts undertaken by TPPs as well as the annual report for the FY 20-21 shall be submitted.	<p>1. Summary status of additional measures being taken are attached as <b>Annexure 1</b>.</p> <p>2. Annual report already submitted with last compliance report.</p>
B.	For the achievement of new emission norms, equipments like FGD, SCR/ SNCR etc shall be got installed as per the time lines provided to them by the CPCB.		<p>1. The efforts so far under taken by the TPPs are unsatisfactory. TPPs like JP Nigrie and Hindalco have already crossed the stipulated time lines and other TPPs also seem to be delaying the stipulated time lines. No one so far has been able to obtain revised timelines from CPCB / MoEF. Hence actions taken for compliance with the stipulated time lines need to be reported.</p> <p>2. MoEF&amp;CC vide its notification dated 31-03-2021 has introduced amendments in the timelines for compliance, TPPs are expected to report compliance in light of the new notification also.</p>	<p>1. Contracts for the works have been awarded as required.</p> <p>2. FGD installation work, to achieve flue gas SO2 limits, is in progress in all the Units (1-12). Progress of work is as per <b>Annexure 2</b>. Timeline defined as per the MoEF &amp; CC notification dated 31-03-2021 [Environment (Protection) Amendment Rules, 2021] will be achieved.</p> <p>3. Flue gas NOx limit achieved in Unit 8, Unit 10 and Unit 12. Action plan in place to achieve the limit in other Units and work is in progress to achieve the same before the timeline defined as per the MoEF &amp; CC notification dated 31-03-2021 [Environment (Protection) Amendment Rules, 2021].</p>

**ENCLOSURE 1A / IV**



<p>C.</p>	<p>Fly ash dyke shall be monitored regularly for their strength through some reputed organizations. The design should be safe and timely maintenance should be regularly ensured.</p>	<p>TPPs have reported that the dyke strength testing has been carried out through outside testing agencies. But no SOPs have been provided as to the frequency of dyke strength checking, safety measures implementation, actions taken to implement the advice / recommendations of the testing agencies etc which shall be reported. Specifically for M/s Sasan TPP, its regular ash dyke is creating water logging situations in the fields, however no action has been proposed for the control of it.</p>	<ol style="list-style-type: none"> <li>1. In order to ensure dyke stability and safety, detailed technical audit by external expert is being carried out on annual basis.</li> <li>2. IIT – Roorkee had conducted dyke stability analysis of all 4 Shahpur dykes of NTPC Vindhyachal in 2019. As per the report submitted, design and construction of the dykes was reported to be safe and no additional measures to enhance safety and stability of dyke were suggested. However, for V1 dyke, additional water escape structures in the form of spillways were suggested to take care of excessive rainfall conditions and the same have been incorporated in the design of the dyke and construction is completed.</li> <li>3. IIT-Delhi conducted separate stability analysis of V2 dyke of NTPC Vindhyachal in 2020 and suggested some berm stabilization through rockfill strengthening of Starter dyke. Work is in progress to implement the same.</li> <li>4. IIT-Hyderabad has conducted a comprehensive stability analysis of all Ash Dykes of Vindhyachal. The work included drone surveying and details are attached as <b>Annexure 3</b>. Report of the study is awaited.</li> <li>5. Weekly inspection of all ash dykes is being carried out by inter-departmental team of NTPC Vindhyachal. Apart from this, daily monitoring in night is being done during the Monsoon period. These inspections are over and above the 24 hour patrolling being done in dyke area through contractual manpower to monitor any abnormality. Any observations during these inspections are immediately attended.</li> <li>6. Robotic inspection of water escape structure and decanting pipelines for V-2 ash dyke has been carried out by M/s Digital Surveillance Inc. The wells were inspected internally by deploying a specially designed</li> </ol>
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				truss frame carrying a Pan Tilt Zoom camera, with an objective to visually examine the condition of the well. The pipelines were inspected internally by deploying a robot equipped with video camera for visual inspection and sonar profiler for mapping ash accumulation. <b>No major defect was observed in the inspection.</b>
D.	Air borne fly ash from the ash dykes, specifically during summers should be controlled through arrangements of water sprinkling, vegetation and other scientific measure.	Verifiable / Quantifiable measures undertaken to control the air borne fly ash for the ash ponds in the ensuing summer season shall be reported along with photographs.	<ol style="list-style-type: none"> <li>04 No of Fog Canons have been procured and are under commissioning.</li> <li>15 Eagle Sprinklers and 50 Garden Sprinklers in a HDPE Pipe Network of 500 Meters installed in Baliyari Dyke.</li> <li>40 more automatic swiveling sprinklers have already been procured and procurement of another 200 is under progress. Installation expected to be completed in 2021-22.</li> <li>Procurement of additional 20 Km HDPE Pipes and Garden Sprinkling System for Fugitive Dust Suppression is in progress. Installation expected to be completed in 2021-22.</li> <li>Manual sprinkling through flexible hose pipes is being done in all the dykes.</li> <li>Thin water film is maintained on top of all ash dykes that are in service to prevent fugitive dust emission.</li> </ol>	
E.	NTPC- VSTPS shall ensure to start disposal of the fly ash in the abandoned Gorbi mines, and shall complete the related studies at the earliest.	Ash haul back study shall be completed at the earliest and permanent proposal for the conveyance of the fly ash from TPP site to Gorbi mines should be finalized at the earliest.	<ol style="list-style-type: none"> <li>Ash filing in GORBI mines has been started.</li> <li>Ash haul back study completed. Concept report submitted by consultant. Final decision for mode to be selected under discussion.</li> </ol>	



F.	Health check up of villagers through mobile medical van be conducted regularly for the detection of the occupational diseases like silicosis, fluorosis etc. and treatment be provided under CSR activities. Record should be maintained and made available to the district health authorities.	TPPS may conduct other routine check ups like eye camps etc as usual but health check up of villagers through mobile medical van for the detection of the occupational diseases like silicosis, fluorosis etc, shall be specifically conducted and reported to the district health authorities. TPPs like Sasan Power have reported in a cursory way.	In the prevailing COVID 19 conditions, regular medical camps are not being held. Health check-ups as per the recommendation will be taken up if and when the situation permits.
G.	The thermal power plants namely, M/s Essar Power MP Ltd. and M/s Sasan Power Ltd. shall deposit with MPPCB the remaining amount of environmental compensation of Rs. 9 Cr., and Rs. 8 Cr. respectively out of the levied amount of Rs.10 Cr. M/s NTPC- Vindhyachal, has however obtained a stay from Hon'ble Supreme Court.	Recommendations stand good for Sasan Power Ltd as well as Essar Power Ltd, however NEERI has already submitted its report in its case amounting to a compensation of Rs. 91.82 Cr., which needs to be deposited. Similarly Sasan Power should deposit Rs 8.0 Cr as interim environmental compensation.	No further hearing in the case has taken place.
H.	NPTC- Vindhyachal shall complete the dredging of the Rihand reservoir for the removal of the ash flow into it due to breach of its ash dyke and to complete it within 3 months time.	NTPC- Vindhyachal has reported that spilled out ash has been lifted from land and from Rihand Reservoir. However it has not been clarified that how much ash has been removed from the Rihand reservoir, and whether there is any more fly ash still remains in the reservoir ( <b>observation as recorded in the third report of Oversight Committee</b> ).	About 1 lac MT of ash/sludge has been lifted through dredging from the Reservoir and its catchment area. Since as per the CPCB-MPPCB joint committee report, the approximate quantity of ash breached out was estimated to be 2.25 Lac MT and this quantity of ash is already lifted from land (surface ash) and from Rihand reservoir and its catchment area, it is estimated that all the fly ash spilled out in the reservoir and its catchment area due to V1 dyke breach is now cleared.



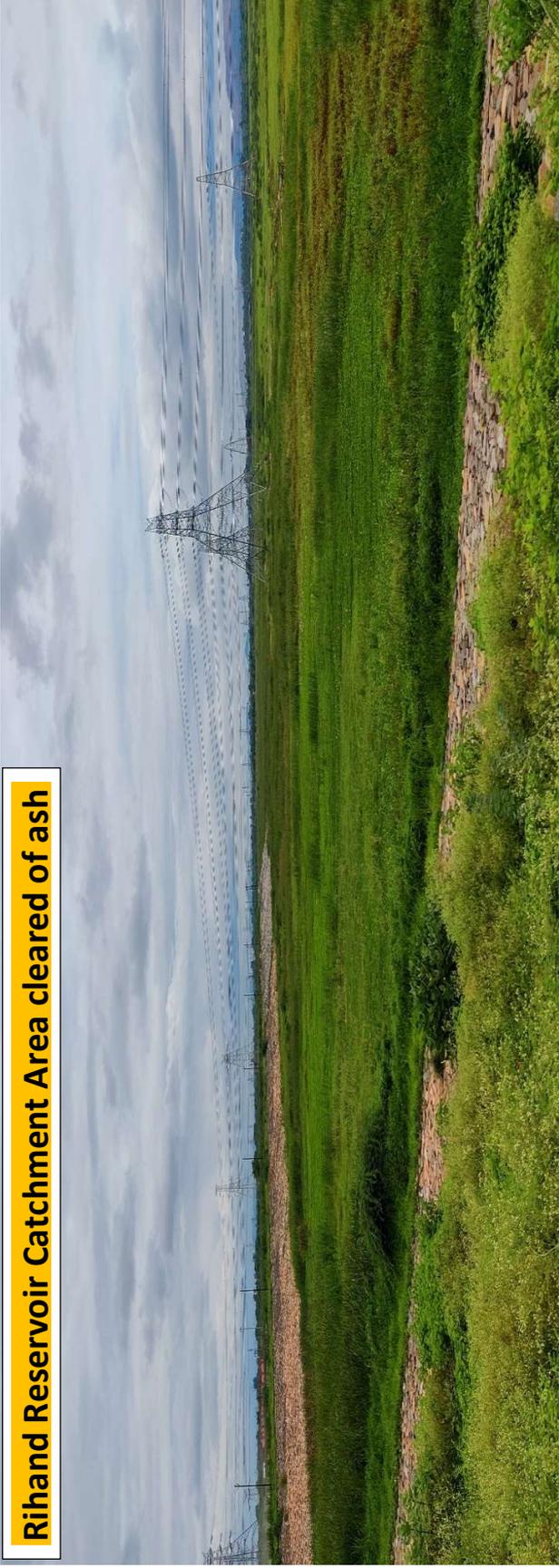
I.	<p>NPTC- Vindhychal should complete the studies of making RCC wall around the ash dyke through IIT Roorkee/ IIT Delhi and submit the report for further consideration on its technical viability. Similarly studies / action should be initiated for the construction of Ash mounds.</p>	<p>Compliance status and progress to be reported.</p>	<p>1. Feasibility study by IIT-Roorkee regarding RCC wall construction around Ash dyke area has been completed. As per the report, <b>“the construction of RCC wall around the ash dykes is neither feasible from technical point of view nor required as the existing dykes are found to be structurally safe having adequate margin of factor of safety as per codal provisions of IS codes.”</b> Report attached as <b>Annexure 4</b>.</p> <p>2. Regarding Ash Mound construction, technical consultancy for the works involved is not readily available. But after lot of follow-up, a preliminary scope of consultancy work has been received from IIT-Delhi and a proposal for construction of ash mound above one of the abandoned ash dykes as a pilot project is currently under discussion/consideration. Meanwhile, IIT-Hyd has conducted Seismic analysis of the site proposed for Ash mound development. The results are awaited.</p>
J.	<p>All the TPPs / industries shall calibrate all the CAAQMS and CEMS installed by them in 3 months (if not done recently) and submit the report to the committee. Such reports will be useful in checking the error percentage in the results.</p>	<p>Reports as to calibration frequency and results to be reported by all, specifically by Sasan Power Ltd.</p>	<p>Already submitted.</p>



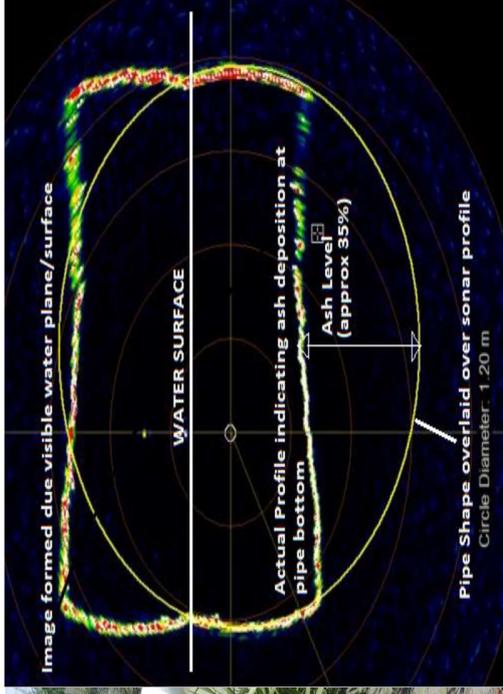
(Munish Jain)  
**Addl. General Manager,**  
**(Env. Management),**  
**NTPC-Vindhychal**



**Rihand Reservoir Catchment Area cleared of ash**



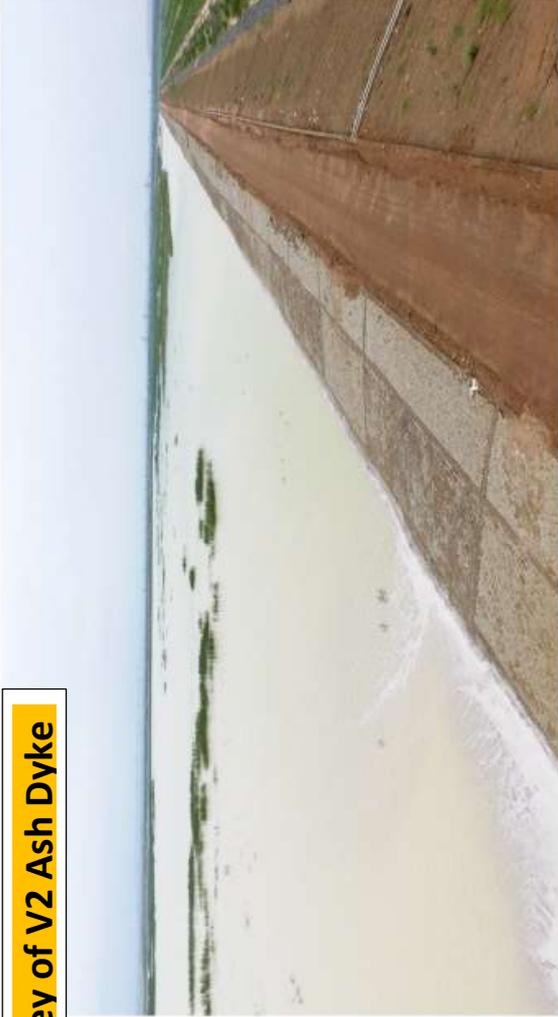
**Ash Dyke Water Sprinkler**



**Robotic Inspection of wells for structural adequacy of decanting system in V2 DYKE in April 21**  
**(First time in NTPC)**



**Drone Survey of V2 Ash Dyke**



Sp Adobe Spark



A Maharatna Company

एन टी पी सी लिमिटेड  
(एनपीएससी का उत्तरदायी)  
**NTPC Limited**  
(A Govt. of India Enterprise)

विंध्याचल/ VINDHYACHAL



A Maharatna Company

# Unit # 1-12 FGD Construction





**Unit 10 DeNOx system installation**

**GORBI mine ash filling started**



A handwritten signature or mark in black ink, located at the bottom right of the page.

**Rail loading facility under SILOs for ash transport  
by rail**



**Despatch of railway rack of bagged fly ash  
to Star Cements, Assam**



## Annexure 1

### Initiatives & Measures taken by NTPC Vindhyachal to improve ash utilization

1. NTPC Vindhyachal has successfully started backfilling of GORBI mine from 15.07.2021. The one pit of the mine currently allotted to NTPC Vindhyachal has the capacity to cater to the needs of VSTPS for 10 years if 75 % ash utilisation is achieved in other avenues.
2. Cement manufacturers are being given incentive for ash lifting from VSTPS to share the transportation cost and make it financially viable for them. Cement Manufacturers are also being pursued to set up Clinker Grinder Units in the area. UP Government is providing support/subsidies for setting up Cement grinding units. Similar support is solicited from our State Government Authorities.
3. After constant follow-up with NHAI, a requirement of 10 Lac MT has been received from them for use in road construction in Varanasi area and ash supply through road transport is in progress. VSTPS is committed to provide ash to all projects under Pradhan Mantri Gramin Sadak Yojna and asset creation programmes of the Government involving construction of buildings, road, dams and embankments within 300 kms of the Plant as and when the requirement is received.
4. To meet the requirement of NHAI, Ash transportation by RCR mode (Road cum Rail mode) is also envisaged and a pilot project to transport 20,000 MT pond ash is underway. Tendering for the same is likely by August end.
5. Infrastructure and Facilities are being developed for start of ash transport through rail route to make the transportation economical and environment friendly. One rack of fly ash was transported to Star Cement, assam in Jan'21. NTPC is procuring 3 rakes of BTAP wagons at a cost of ~ 60 crores. Two racks have already been delivered. Direct rail loading facility for all the six Units of Stage 1 & both the Units of Stage 4 is under commissioning. Regular transport of ash through rail is likely to start in Aug'21.
6. 50 kg Ash Bagging Machines have been installed for transport of ash in bagged form to avoid fugitive dust. Jumbo Bagging Machine (3 Tonne) and Automatic Bagging Machine (1 Tonne) is also under procurement.
7. Ash park has been set up at Rewa where fly ash transported in 50 kg bags from VSTPS is being made available to the ash based industries in the region.
8. Free of cost Door step delivery of fly ash is being made to the ash based industries within 100 kms from the Plant.
9. Supply of fly ash to the ash based industries in 100 - 300 kms radius of the Plant on cost sharing basis is being done, as envisaged in the MoEF notification.
10. VSTPS is actively following up with Distt Administration for allotting any abandoned quarries which can be developed using ash. Ash filling in one no. of stone quarry allotted to VSTPS in Makrohar region has already been completed (~ 90,000 MT of ash filling was done).

11. VSTPS is also doing free of cost land development using ash, as per CPCB guidelines, at various locations within 100 kms of Plant radius. Total ash utilisation in these contracts is expected to be around 10 LMT this year.
12. VSTPS is making around 75,000 ash bricks/day for its own use. No red brick is used for any construction activity within Plant ortownship.
13. VSTPS has been constantly requesting NCL for mixing of fly ash with OB as per the provisions of MoEF notification on Fly Ash but positive response from NCL has not been received. NGT/Pollution control authorities support is solicited to facilitate the same.
14. VSTPS is in dialogue with leading consultants for technical studies and feasibility of construction of Ash Mound. IIT, Delhi has given an initial proposal for pilot project.

**Annexure 2**

Unit No.	Present Status	% of work completed	Expected Commissioning
1, 2, 3	Chimney piling work completed.	13	Sep'23
4, 5, 6	Chimney piling work in progress.	13	
7	Absorber system foundation work and chimney piling completed. Flue gas duct and Booster Fan foundation works started.	13	
8	Absorber system foundation work and chimney piling completed.	13	June'23
9	Absorber system and Booster Fan foundation piling completed. Cable Trestle foundation works started.	48	
10	Absorber system foundation work and Wet chimney foundation work completed.	48	
11	Absorber system, Chimney and Booster Fan piling work in progress.	48	
12	Absorber system works started. Flue gas duct, Booster fan piling work completed. Chimney erection started.	48	

## Annexure 3

### IIT, Hyderabad Scope of Work summary

In order to ensure the healthiness of ash dykes of NTPC Vindhyachal, stability study has been carried out by IIT Hyderabad. Major works/ analysis can be summarised as follows:

- i. Development of digital elevation models/any similar model in identifying any existing weak zones in the dykes using DJI Phantom 4 Pro equipped with GPS system and camera.
- ii. SPT testing/similar testing methods: This will help in arriving at the profile and the properties of the starter and raising dykes. In-situ density, etc. will be found out.
- iii. Collection of samples from site (at least 1-2 samples from each lagoon) to find out properties such as Shear Strength, Cohesion and Angle of Internal Friction.
- iv. Stability analysis of all the lagoons using GeoStudio software (SEEP/w and SLOPE/w) or Slide software/similar software to check the stability analysis of existing dykes. These methods help in limit equilibrium analysis.
- v. The stability analysis to be performed for different conditions (steady seepage, rapid drawdown, seismic loading, etc).
- vi. All the lagoons with ultimate height raisings will be considered in the stability analysis under loads. Slope stability analysis will be carried out for different loading conditions.
- vii. Water level observations in Piezometers, if any
- viii. Locational Settlement /Settlement Gauges monitoring data, if any
- ix. Recommendations about the healthiness of existing ash dykes including remedial measures, if any

# REPORT ON FEASIBILITY STUDY FOR CONSTRUCTION OF RCC WALL AROUND ASH DYKES OF NTPC VINDHYACHAL

**N. K. Samadhiya**

Professor, Department of Civil Engineering, IIT Roorkee

## 1.0 INTRODUCTION

Er. Rishi Kapoor, Deputy General Manager (Ash Dyke-Civil) NTPC Ltd. VSTPS, Vindhyachal, Madhya Pradesh vide e-mail dated October 26, 2020 requested Prof N.K. Samadhiya, Department of Civil Engineering, Indian Institute of Technology (IIT) Roorkee regarding site visit and feasibility study for construction of RCC wall around ash dykes of NTPC Vindhyachal in Shahpur area in the light of recommendations of Honorable NGT. The proposal was sent by Dr. N. K. Samadhiya, Professor, Department of Civil Engineering, IIT Roorkee vide letter No. CED/GTE/NKS/2210 dated November 10, 2020. The acceptance of the proposal was communicated by Mr. Amit Kumar Saha, Senior Manager (CS), SSC NR Vindhyachal vide Purchase Order No. 4000250830 - 026-1018 Dated 16.12.2020. A site visit was undertaken by Prof N K Samadhiya on April 04, 2021 for assessing the feasibility of RCC retaining wall around the dykes.

This report is based on the observations at site and the information provided by NTPC, Vindhyachal. The recommendation has been made on the basis of technical requirements of the stability of dykes.

## 2.0 GENERAL

NTPC Vindhyachal is a coal based thermal power plant with installed capacity of 4760 MW. It is the India's largest thermal power plant, situated at Vindhyaagar, Singrauli, Madhya Pradesh. This power plant generates around 07 million m<sup>3</sup> of ash annually. Fly ash generated at NTPC Vindhyachal is mainly utilized in supply to cement manufacturing, ash brick manufacturing and other ash-based products manufacturing industries, NHAI for road construction, raising and buttressing of ash dykes, wasteland development works using pond ash etc. Balance ash is safely disposed of and is stored in ash dyke lagoons. NTPC Vindhyachal has six ash dyke lagoons viz. V-1, V-2, V-3A, V-3B, located in Shahpur area



and V-4A & 4B located in Baliyari area.

### **3.0 ASSESSMENT OF EXISTING ASH DYKE STRUCTURE & ITS STABILITY**

Unlike water reservoir, the dyke embankments for ash pond are generally not constructed up to ultimate height in one go and initially constructed up to a limited height with provision of subsequent raising as per requirement. Ash dyke lagoon is provided with garlanding arrangements for changeover of the ash slurry feed points for even filling of the pond and for effective settlement of the ash particles. Having two or more storage lagoon facilitates sequential raising of lagoons by putting one lagoon for ash filling while the other lagoon is used for raising its dyke. Overflow lagoon helps in controlling the effluent quality of the supernatant, which is recycled back to plant for making ash slurry. The ash disposal areas of Vindhyachal STPS is located in earthquake Zone-III as per IS: 1893.

The Starter dyke and subsequent raisings of different ash dyke lagoons are finalized and constructed in stages based on the ground topography, foundation soil conditions, availability of construction material and storage requirements etc. The requirements for design of dyke embankments are to ensure; safety against slope stability, safety against internal erosion and safety against overtopping. Accordingly, the structural design of ash dyke embankments of Vindhyachal STPS has been checked for stability in all critical states under Static and Earthquake conditions as per IS codes and found to be safe.

As per the instructions of honorable NGT, to check the structural adequacy of the VSTPS dykes, a scientific evaluation of the constructed ash dykes has been done independently by IIT-Roorkee. Based on the evaluation report of IIT Roorkee (copy enclosed), it is established that design of ash dyke embankments of Vindhyachal STPS has been carried out as per prevailing engineering practices and found to be safe.

Further, with the recommendations of IIT-Delhi, NTPC Vindhyachal is carrying out the berm stabilization of V2 dyke for its further strengthening from toe of starter dyke towards the reservoir as per the sketch of Fig.1. Photographs 1 to 3 show the work being carried out.



STRENGTHENING MEASURE FOR STARTER DYKE USING ROCKFILL MATERIAL

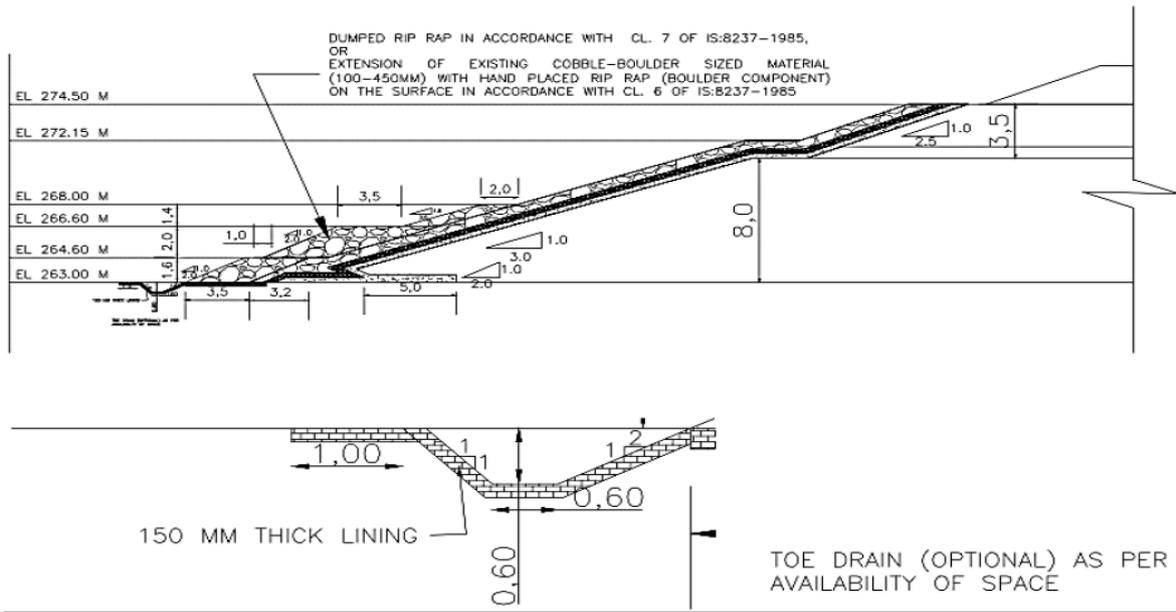


Fig. 17: Strengthening of starter dyke using rockfill material

Fig-1-Proposed Section for Berm Stabilization with Rockfill (As per IIT Delhi)



Photograph 1

*Bamadhriya*



Photograph 2



Photograph 3

*Bama Khya*

This additional two levels of berm stabilization involving around 45,000 cum of rockfill will provide additional FOS to dyke, taking it beyond the required values of 1.5 for dynamic conditions. As per the site conditions also, at many stretches of reservoir where slushy bed is encountered, there additional strengthening with 2-3 layers of boulders (each 300 mm thick) is also being done, this will add to the berm stabilization along the starter dyke of reservoir.

#### 4.0 ASSESSMENT ON FEASIBILITY OF RETAINING WALL

In NTPC, the unused ash is stored in ash dykes and in order to optimize the use of land, the ash dyke is constructed in stages as shown vide Fig-2 below.

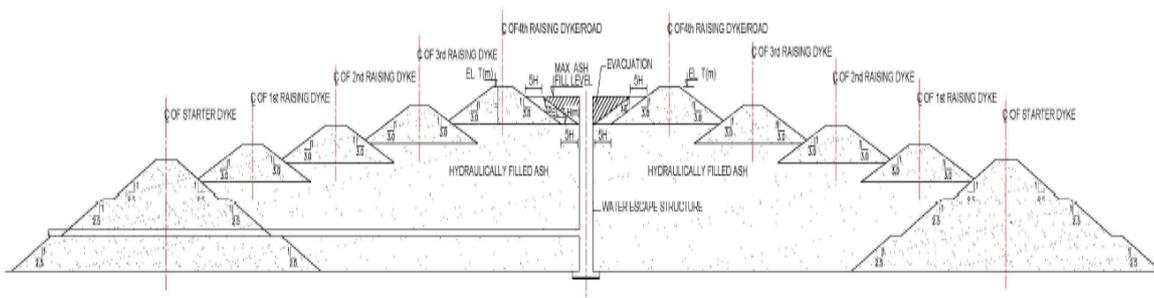


Fig. 2 – Typical upstream raising of ash dykes

The height of bottom most dyke or starter dyke varies from 1 m to 15 m depending on the initial ground topography, while the subsequent raisings being 3 m high each. As the construction and filling of the dykes proceed upwards, the lower layers of deposited ash are consolidated and not amenable to breach as they have very low water content. The risk of breach, if any, exists at the top most working dykes which have ash slurry stored in it and receive the rainwater during monsoons.

The construction of RCC wall rising from the bottom of the dyke implies extensive rigid structure running into several Kilometers in length and to be more than 15-20 m high to be of any use in stopping the deluge of ash slurry in case of a breach. The natural ground level is highly undulating along dyke toe. The strata below ground level, water table along the dyke alignment is also varying. Further, the ash dykes V1, V2, V3A and V3B of Vindhyachal STPP are located in peninsular region of the Rihand reservoir and the outer

*Bamadhya*

periphery of the dykes are submerged in water during high water levels in the reservoir as shown vide Fig. 3. Out of the total 19km of peripheral length of dykes in Shahpur area (V-1, V-2, V-3A and V-3B), 9km is surrounded by the Rihand reservoir.

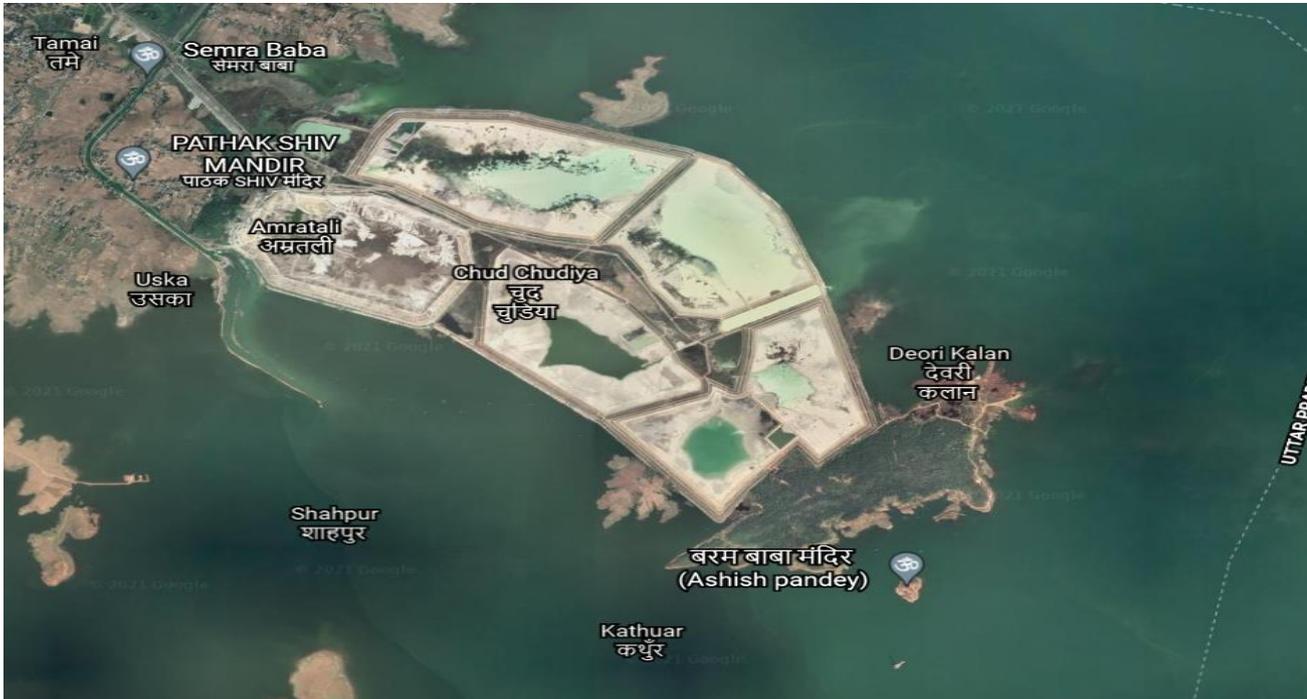


Fig. 3 – Layout and location of Shahpur ash dykes

Construction of RCC wall around dyke toe will require significant depth of excavation for its foundation along dyke toe and in submergence areas of Reservoir, which is not advisable on account of dyke safety. The construction of RCC wall at the toe of the working dyke (i.e. that of the present raising in service) is not feasible as the working ash dykes themselves are resting on the ash deposits of earlier raisings.

Additionally, the RCC wall will create hindrance in regular operation and maintenance of ash dykes and associated ash handling systems.

## 5.0 RECOMMENDATION ON FEASIBILITY OF RETAINING WALL

The conventional method of construction of ash dykes comprises of a starter dyke constructed with the locally available material and the raisings with the fly ash. The slopes of both the starter and raisings are kept mild so that the factor of safety of the dykes remains well above the minimum values. In the case of Vindhyachal dykes, all the

*Bama Shriya*

requirements are met with. It has also been established that the ash dyke embankments of Vindhyachal STPS are safe in all critical states under Static and Earthquake conditions, as per IS codes, by the stability analysis carried out by NTPC and independently by IIT-Roorkee. Further, the berm stabilization of V2 dyke for its further strengthening from toe of starter dyke towards the reservoir will enhance the stability.

The retaining walls to support the starter dykes are provided if there is restriction of the space due to which mild slopes cannot be provided. However, there is no such requirement for Vindhyachal dykes.

If the requirement of a retaining wall is considered from the point of view of storage of the fly ash slurry behind the retaining wall so that it does not enter in to the adjoining private property in the eventuality of dyke failure, the height requirement will be of the order of 15 to 20m. Corresponding width of the retaining shall be of the order of 9 to 12m. Further the retaining wall will have to designed for the impact load which will necessitate huge section. Such a construction is not feasible at the site.

Also the dykes cannot be augmented by provision of RCC retaining wall since out of the total 19 km perimeter of V-1, V-2, V-3A and V-3B dykes, 9km is surrounded by the Rihand reservoir where there is no space available to accommodate the required width of the foundation of such a retaining wall. Most length of the left-over perimeter is in the areas where dyke boundaries face each other and as such no spill over outside NTPC premises will take place.

Thus, the construction of RCC wall around the ash dykes is neither feasible from technical point of view nor required as the existing dykes are found to be structurally safe having adequate margin of factor of safety as per codal provisions of IS codes.



**(Prof. N.K.Samadhiya)**

**ENCLOSURE 1B /IV**

hemant Sharma &lt;hsharma1091@gmail.com&gt;

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**compliance status of the recommendations of Over-sight committee**

2 messages

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**Amitosh.Verma@relianceada.com** <Amitosh.Verma@relianceada.com>  
To: hsharma1091 <hsharma1091@gmail.com>  
Cc: AK.Singh@relianceada.com, Sachin.Mohapatra@relianceada.com

Tue, Aug 17, 2021 at 6:49 PM

Respected Sir,

Please find attached till date compliance status of the recommendations of oversight committee,

Regards,

**Dr. Amitosh Verma**(डॉ०अमितोष वर्मा)  
Environment Department  
Sasan Power Limited  
RIM: 09098683892

**"If You Can't Clean Your Surrounding; Then Don't Make It Dirty"**

The information contained in this electronic message (email) and any attachments to this email are intended for the exclusive use of the addressee(s) and access to this email by any one else is unauthorised. The email may contain proprietary, confidential or privileged information or information relating to Reliance Group. If you are not the intended recipient, please notify the sender by telephone, fax, or return email and delete this communication and any attachments thereto, immediately from your computer. Any dissemination, distribution, or copying of this communication and the attachments thereto (in whole or part), in any manner, is strictly prohibited and actionable at law. The recipient acknowledges that emails are susceptible to alteration and their integrity can not be guaranteed and that Company does not guarantee that any e-mail is virus-free and accept no liability for any damage caused by any virus transmitted by this email.

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**2 attachments****NGT Oversight Committee Compliance Status.pdf**  
2480K**Annual Fly ash Return-2020-21.pdf**  
243K

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**hemant Sharma** <hsharma1091@gmail.com>  
To: amitosh verma <Amitosh.Verma@relianceada.com>

Mon, Aug 23, 2021 at 5:09 PM

Kindly furnish the status of EDC study report by NEERI and also forward if any communication received from NEERI by you.

**With Best Regards,**  
**H. K Sharma,**  
**Director Environment,**  
**MP Pollution Control Board,**  
**Bhopal**

[Quoted text hidden]

**Recommendations of the Oversight Committee in its first quarterly report for Compliance by the various stakeholders**

Oversight Committee Recommendations in its first quarterly report	Remarks / Expected Compliance	SPL Update
<p><b>Thermal Power Plants</b></p> <p>The thermal power plants shall ensure that 100% fly ash utilization of the fly ash shall be ensured by them as per the Fly ash Notification.</p> <p>For the achievement of new emission norms, equipments like FGD, SCR/ SNCR etc shall be got installed as per the time lines provided to them by the CPCB.</p>	<p>Plans have been submitted by TPPs for 100% fly ash utilization but barring one TPP (JP Nigrie), others are unable to utilize 100% of fly ash. Hence compliance to be reported on additional steps / efforts undertaken by TPPs as well as the annual report for the FY 20-21 shall be submitted.</p> <p>1. The efforts so far under taken by the TPPs are unsatisfactory. TPPs like JP Nigrie and Hindalco have already crossed the stipulated time lines and other TPPs also seem to be delaying the stipulated time lines. No one so far has been able to obtain revised timelines from CPCB / MoEF. Hence actions taken for compliance with the stipulated time lines need to be reported. 2. MoEF&amp;CC vide its notification dated 31-03-2021 has introduced amendments in the timelines for compliance, TPPs are expected to report compliance in light of the new notification also.</p>	<p>A detailed plan for achieving 100% ash utilization, including use of ash in the coal mine is already submitted. It is also intimated that study by Central Institute of Mining and Fuel Research (CIMFR), Dhanbad for Geotechnical stability analysis for over burden dump, during and after ash dumping by mixing it with mine OB in MMAE-OCP is under progress. A pilot project is presently under field trial. After studying the data from the said pilot project, CIMFR will finalize its report giving its recommendations. Recommended scheme would be then implemented after obtaining required approvals. As per our present estimate the erection and commissioning of the scheme is expected to be completed by Q1, FY 2023-24. A copy of Annual Ash return for FY 20-21, which is already submitted to your good office, is attached herewith</p>
<p>Fly ash dyke shall be monitored regularly for their strength through some reputed organizations. The design should be safe and timely maintenance should be regularly ensured.</p>	<p>TPPs have reported that the dyke strength testing has been carried out through outside testing agencies. But no SOPs have been provided as to the frequency of dyke strength checking, safety measures implementation, actions taken to implement the advice / recommendations of the testing agencies etc which shall be reported. Specifically for M/s Sasan TPP, its regular ash dyke is creating water logging situations in the fields, however no action has been proposed for the control of it.</p>	<p>A letter regarding status and implementation of new emission norms is already submitted vide letter dated 05-Feb-2021 and is also the part of second compliance report.</p> <p>Nox norms are now revised by MoEF&amp;CC and Sasan is not crossing the revised limits of 450 mg/nm3</p>
		<p>A report on ash dyke stability testing by IIT BHU is already submitted to the Committee. In addition to this another comprehensive ash dyke stability study has been carried out by IIT BHU and report of the same is submitted to the MPPCB on 20.08.2020 and to CPCB and MoEF&amp;CC on 16.09.2020.</p> <p>It is also submitted to the NGT committee that dyke will be inspected by an expert agency like IIT, every year before monsoon for its strength and stability. In line with the same premonsoon inspection is already done by IIT-BHU for this year.</p> <p>Regarding prevention of water logging in the fields, following measures have been undertaken:</p> <ol style="list-style-type: none"> <li>1. The outer slope of on going dyke bund raising is being covered with soil at critical locations and is under progress.</li> <li>2. Vulnerable outer slope portions have been covered with impervious HDPE lining to prevent from rain cut and further outward flow to fields.</li> <li>3. Toe drain is being constructed along the peripheral portion to avoid any flow to outside land areas.</li> <li>4. Gabion Box retaining wall arrangement work is in progress at toe area of ash dyke for prevention of sliding and flowing of ash in outside land.</li> </ol>

<p>Air borne fly ash from the ash dykes, specifically during summers should be controlled through arrangements of water sprinkling, vegetation and other scientific measure.</p>	<p>Verifiable / Quantifiable measures undertaken to control the air borne fly ash for the ash ponds in the ensuing summer season shall be reported along with photographs as on 30-04-2021.</p>	<p>The ash in the ash dyke is kept in moist form and covered with vegetation and is grown to avoid any fugitive emission.</p>
<p>NTPC- VSTPS shall ensure to start disposal of the fly ash in the abandoned Gorbi mines, and shall complete the related studies at the earliest.</p>	<p>Ash haul back study shall be completed at the earliest and permanent proposal for the conveyance of the fly ash from TPP site to Gorbi mines should be finalized at the earliest. MPPCB is soon granting its permissions, permission from DGMS also need to be obtained.</p>	<p>Not applicable to SPL</p>
<p>Health check up of villagers through mobile medical van be conducted regularly for the detection of the occupational diseases like silicosis, fluorosis etc. and treatment be provided under CSR activities. Record should be maintained and made available to the district health authorities.</p>	<p>TPPs may conduct other routine check ups like eye camps etc as usual but health check up of villagers through mobile medical van for the detection of the occupational diseases like silicosis, fluorosis etc, shall be specifically conducted and reported to the district health authorities. TPPs like Sasan Power have reported in a cursory way.</p>	<p>Public Health Department is carrying out checkups for the detection of occupational diseases like silicosis, fluorosis etc. We understand that till date there is no case of fluorosis / silicosis reported by Public Health Department by from any nearby villages.</p>
<p>The thermal power plants namely, M/s Essar Power MP Ltd. and M/s Sasan Power Ltd. shall deposit with MPPCB the remaining amount of environmental compensation of Rs. 9 Cr., and Rs. 8 Cr. respectively out of the levied amount of Rs. 10 Cr. M/s NTPC- Vindhyachal, has however obtained a stay from Hon'ble Supreme Court.</p>	<p>Recommendations stand good for Sasan Power Ltd as well as Essar Power Ltd, however NEERI has already submitted its report in its case amounting to a compensation of Rs. 91.82 Cr., which needs to be deposited. Similarly Sasan Power should deposit Rs 8.0 Cr as interim environmental compensation.</p>	<p>A detailed reply has already been submitted by SPL to MPPCB latest being vide letter dated 15-Jan-2021</p>
<p>NPTC- Vindhyachal shall complete the dredging of the Rihand reservoir for the removal of the ash flow into it due to breach of its ash dyke and to complete it within 3</p>	<p>The work is still not complete as reported by NTPC, which shall be completed in any case before the onset of monsoon. Progress to be reported as on 30-04-2021.</p>	<p>Not applicable to SPL</p>
<p>NPTC- Vindhyachal should complete the studies of making RCC wall around the ash dyke through IIT Roorkee / IIT Delhi and submit the report for further consideration on its technical viability. Similarly studies / action should be initiated for the construction of Ash</p>	<p>Compliance status and progress to be reported as on 30-04-2021.</p>	<p>Not applicable to SPL</p>
<p>All the TPPs / industries shall calibrate all the CAAQMS and CEMS installed by them in 3 months (if not done recently) and submit the report to the committee. Such reports will be useful in checking the error percentage in</p>	<p>Reports as to calibration frequency and results to be reported by all, specifically by Sasan Power Ltd.</p>	<p>Calibration of CAAQMS and CEMS is carried out on a regular basis. Latest calibration certificates attached for your perusal please.</p>
<p><b>2. COAL MINES</b> Road sweeping machines in sufficient numbers shall be procured and regular sweeping of the coal transport roads shall be undertaken to keep them dust free.</p>	<p>Status of procurement of additional 4 road sweeping machines as on 30-04-2021 to be reported.</p>	<p>Not applicable to SPL Transportation of coal from SPL mines to Sasan power plant is done through the single flight overland coal conveyer (OLC).</p>
<p>Paving of the road side shoulders along the coal transport roads shall be undertaken within 3 months under the guidance and supervision of the district administration.</p>	<p>Paving of shoulders of such all other city roads, where the coal truck movement takes place shall be chalked out in consultation with district administration and RO MPPCB and time bound action plan for the same be submitted.</p>	<p>Not applicable to SPL Transportation of coal from SPL mines to Sasan power plant is done through the single flight overland coal conveyer (OLC)</p>
<p>Maintenance of railway sidings operated by NCL shall be undertaken as per the guidelines published by CPCB titled "Inventorization of Railway Sidings and Guidelines for their Environment Management- March 2015".</p>	<p>Verifiable details of the Compliance as per the CPCB guidelines for Spur I and Spur II as on 30-4-2021 along with photographs and drone camera videography shall be submitted.</p>	<p>Not applicable to SPL Transportation of coal from SPL mines to Sasan power plant is done through the single flight overland coal conveyer (OLC)</p>

<p>Utilization of fly ash, in over burden (OB) of working mines and conducting pilot studies for the same as per Fly ash notification and CPCB guidelines shall be undertaken and 25% use fly ash in the OB dumps shall be done as per Fly Ash Notification, 1999.</p>	<p>The actions taken so far by NCL are questionable. The status of the CMPDI study which was promised atleast three years before the core committee shall be provided and action taken to abide by CPCB guidelines and fly ash notification be given.</p>	<p>In this regard a study by Central Institute of Mining and Fuel Research (CIMFR), Dhanbad for Geotechnical stability analysis for over burden dump, during and after ash dumping by mixing it with mine OB in MMAE-OCP is under progress. A pilot project is presently under field trial. After studying the data from the said pilot project, CIMFR will finalize its report giving its recommendations. Recommended scheme would be then implemented after obtaining required approvals. As per our present estimate the erection and commissioning of the scheme is expected to be completed by Q1, FY 2023-24.</p>
<p>Health check up of villagers through mobile medical van be conducted regularly for the detection of the occupational diseases like silicosis, fluorosis etc. and treatment be provided under CSR activities. Record should be maintained and made available to the district health authorities.</p>	<p>Reply given by NCL is not satisfactory. Other routine check ups like eye camps etc may be carried out as usual but health check up of villagers through mobile medical van for the detection of the occupational diseases like silicosis, fluorosis etc, shall be specifically conducted and reported to the district health authorities.</p>	<p>Public Health Department is carrying out checkups for the detection of occupational diseases like silicosis, fluorosis etc. We understand that till date there is no case of fluorosis / silicosis reported by Public Health Department from any nearby villages.</p>
<p>The railway connectivity of the Block B Gorbi mine shall be completed within 3-6 months time to stop the road transportation of the coal. Consequently the operation of the coal loading railway siding of the Block B Gorbi mine shall be terminated thereafter.</p>	<p>The progress reported is very slow. It seems that the issues pertaining to land acquisition and disputes with villagers are not being settled and NCL is not seeking due help and intervention from the district administration, which shall be given due importance and persuasion. Compliance of the progress shall include the efforts made by NCL.</p>	<p>Not Applicable to SPL</p>
<p>The railway sidings operated by NCL should be operated in accordance with the CPCB guidelines. All the coal mines shall calibrate all the CAAQMS installed by them in 3 months (if not done recently) and submit the report to the committee. Such reports will be useful in checking the error percentage in the results.</p>	<p>Recommendation as at 'C' mentioned above</p>	<p>Not Applicable to SPL</p>
<p><b>NEERI</b> NEERI has been entrusted with the studies for the assessment of Environmental Damage Compensation (EDC) due to the ash dyke breach of M/s Essar Power MP Ltd., M/s Vindhya Super Thermal Power Station and M/s Sasan Power Ltd. Neither of the study report has been submitted even after a lapse of long time. NEERI</p>	<p>NEERI should submit the time lines before the committee as to when the EDC report pertaining to M/s VSTPS- NTPC Ltd and Sasan Power Ltd. will be submitted.</p>	<p>Calibration of CAAQMS is carried out on a regular basis. Latest calibration certificate's attached for your perusal please.</p>
		<p>A reply on this point is already submitted to yourself by NEERI separately.</p>

**Ambient Air Quality Monitoring Station (AAQMS)**

**CALIBRATION REPORT**

Date: JULY 2021

Customer Name : M/s Sasan Power limited,  
 Station Location : Singrauli,Sasan mines AAQMS  
 Analyser Make : Thermo Fisher Scientific

Agency : Chemtron  
 Serial No: 1461  
 Concentration

Calibration Standards (Gas/PM) : Thermo Fisher Scientific  
 Dynamic Multi Gas Calibrator : Thermo Fisher  
 Calibration Foil Kit for PM Analysers : 1181 ug

Gas Analyser	Model	Zero Calibration		Background		Span Reading		Coefficient		Unit	Remark
		Old	New	Old	New	Old	New/Source	Old	New		
CO	48i	0.3	0.0	-1.9	-1.6	1.200	1.0	1.73	1.44	ppm	OK
O3	49i	-4.6	0.0	-3.8	-8.4	106.800	100.0	1.12	1.05	ppb	OK
NO	42i	5.4	0.0	9.3	14.7	53.000	50.0	0.60	0.57	ppb	OK
NO2	42i	2.4	0.0			89.0	100.0	1.00	1.00	ppb	OK
NOX	42i	7.8	0.0	-11.3	-3.5	142.000	150.0	1.25	1.32	ppb	OK
SO2	43i	2.60	0.0	-8.6	13.40	88.00	100.00	1.93	1.97	ppb	OK
PM Analysers	Model	Zero Calibration		Background		Span Reading		Coefficient		Unit	Remark
PM 10	5014i			Old Value		New Value		New Value		ug/m3	OK
PM 2.5	5014i			7109		6803		7425		ug/m3	OK
				6803		6989		6989		ug/m3	OK



Thermo Fisher Scientific India Pvt Ltd  
 Shashank Kumar  
 Customer Care Engineer







## CALIBRATION CERTIFICATE

Certificate no- CODEL/GCEM/2021-341

Date of issue-16-08-2021

Customer- Sasan power Ltd

Instrument Details

Instrument- Gas Analyzer

Location- Unit 1

Model- GCEM 4000

Date of Calibration- 16-08-2021

Serial no-597

Frequency- 3 months

Due Date- 15-11-2021

Calibration Gas Details

Cylinder Sr. No. CSL-180220-13719-1-6

Details- Sox 496 ppm, NO 486 ppm, CO 490 ppm , Balance N2

Expiry Date- 17-02-2022

Calibration Details

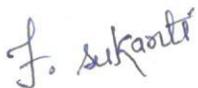
Parameter	Zero Calibration		Span Calibration		
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	% of Deviation
SO2	0 ppm	0 ppm	496ppm	489ppm	0.4%
NO	0 ppm	0 ppm	486PPM	482PPM	0.2%
CO	0 ppm	0 ppm	490PPM	494PPM	0.2%

Accepted Tolerance: +/- 2.8 %

**Result:** The calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated by:

Sagar Halge




Engineer (Forbes Marshall)

## CALIBRATION CERTIFICATE

Certificate no- CODEL/GCEM/2021-342  
 16Customer- Sasan Power Ltd.

Date of issue-16-08-2021

### Instrument Details

Instrument- Gas Analyzer  
 Model- GCEM 4000  
 Serial no- 499

Location- Unit 2  
 Date of Calibration- 16-08-2021  
 Frequency- 3 months  
 Due Date- 15-11-2021

### Calibration Gas Details

Cylinder Sr. No. CSL-180220-13719-1-6  
 Details- Sox 496 ppm, NO 486 ppm, CO 490 ppm , Balance N2  
 Expiry Date- 17-02-2022

### Calibration Details

Parameter	Zero Calibration		Span Calibration		
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	% of Deviation
SO2	0 ppm	0 ppm	496 ppm	495ppm	0.4%
NO	0 ppm	0 ppm	486PPM	489PPM	0.2%
CO	0 ppm	0 ppm	490PPM	492PPM	0.2%

Accepted Tolerance: +/- 2.8 %

Result: The calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated by:

Sagar Halge



*J. Sankar*

Engineer (Forbes Marshall)

Forbes Marshall Private Limited

## CALIBRATION CERTIFICATE

Certificate no- CODEL/GCEM/2021-343  
 Customer- Sasan power Ltd.

Date of issue-16-08-2021

### Instrument Details

Instrument- Gas Analyzer  
 Model- GCEM 4000  
 Serial no- 498

Location- Unit 3  
 Date of Calibration- 16-08-2021  
 Frequency- 3 months  
 Due Date- 15-11-2021

### Calibration Gas Details

Cylinder Sr. No. CSL-180220-13719-1-6  
 Details- Sox 496 ppm, NO 486 ppm, CO 490 ppm , Balance N2  
 Expiry Date- 17-02-2022

### Calibration Details

Parameter	Zero Calibration		Span Calibration		
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	% of Deviation
SO2	0 ppm	0 ppm	496ppm	489ppm	0.1%
NO	0 ppm	0 ppm	486 PPM	491 PPM	0.3%
CO	0 ppm	0 ppm	490PPM	488PPM	0.3%

Accepted Tolerance: +/- 2.8 %

Result: The calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated by:

Sagar Halge

*J. Sekanti*



Engineer (Forbes Marshall)

Forbes Marshall Private Limited

## CALIBRATION CERTIFICATE

Certificate no- CODEL/GCEM/2021-344

Date of issue-16-08-2021

Customer- Sasan power Ltd.

### Instrument Details

Instrument- Gas Analyzer

Location- Unit 4

Model- GCEM 4000

Date of Calibration- 16-08-2021

Serial no-497

Frequency- 3 months

Due Date- 15-11-2021

### Calibration Gas Details

Cylinder Sr.No. CSL-180220-13719-1-8

Details- Sox 526 ppm, NO 524 ppm, CO 477 ppm , Balance N2

Expiry Date- 17-02-2022

### Calibration Details

Parameter	Zero Calibration		Span Calibration		
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	% of Deviation
SO2	0 ppm	0 ppm	526 ppm	522ppm	0.4%
NO	0 ppm	0 ppm	524 PPM	539PPM	0.2%
CO	0 ppm	0 ppm	477 PPM	480PPM	0.2%

Accepted Tolerance: +/- 2.8 %

Result: The calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated by:

Sagar Halge

*S. Sagar*



Engineer (Forbes Marshall)

## CALIBRATION CERTIFICATE

Certificate no- CODEL/GCEM/2021-345  
 Customer- Sasan Power Ltd.

Date of issue-16-08-2021

### Instrument Details

Instrument- Gas Analyzer  
 Model- GCEM 4000  
 Serial no- 539

Location- Unit 5  
 Date of Calibration- 16-08-2021  
 Frequency- 3 months  
 Due Date-15-11-2021

### Calibration Gas Details

Cylinder Sr.No. CSL-180220-13719-1-8  
 Details- Sox 526 ppm, NO 524 ppm, CO 477 ppm , Balance N2  
 Expiry Date- 17-02-2022

### Calibration Details

Parameter	Zero Calibration		Span Calibration		
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	% of Deviation
SO2	0 ppm	0 ppm	526 ppm	521ppm	0.4%
NO	0 ppm	0 ppm	524 PPM	529PPM	0.2%
CO	0 ppm	0 ppm	477 PPM	472PPM	0.2%

Accepted Tolerance: +/- 2.8 %

Result: The calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated by

Sagar Halge

*J. Sankanti*



Engineer (Forbes Marshall)

## CALIBRATION CERTIFICATE

Certificate no- CODEL/GCEM/2021-346  
 Customer- Sasan Power Ltd.

Date of issue-16-08-2021

Instrument Details

Instrument- Gas Analyzer  
 Model- GCEM 4000  
 Serial no- 540

Location- CPP Unit 6  
 Date of Calibration- 16-08-2021  
 Frequency- 3 months  
 Due Date- 15-11-2021

Calibration Gas Details

Cylinder Sr.No. CSL-180220-13719-1-8  
 Details- Sox 526 ppm, NO 524 ppm, CO 477 ppm , Balance N2  
 Expiry Date- 17-02-2022

Calibration Details

Parameter	Zero Calibration		Span Calibration		
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	% of Deviation
SO2	0 ppm	0 ppm	526 ppm	528ppm	0.6%
NO	0 ppm	0 ppm	524 PPM	523PPM	0.3%
CO	0 ppm	0 ppm	477 PPM	480PPM	0.3%

Accepted Tolerance: +/- 2.8 %

Result: The calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated by:

Sagar Halge



*J. Sekant*

Engineer (Forbes Marshall)

**Annexure-A**

**Fly Ash Notification S.O. 2804 (E), 3<sup>rd</sup> November, 2009-  
Statutory Compliance Report for the period of 01.04.2020 to 31.03.2021**

<b>Sl. No.</b>	<b>Item</b>	<b>Reply</b>
1	Name of the thermal Power station	<b>Sasan Power Limited</b>
2	Full Address including PIN code	Village-Siddhi khurd, Post-Tiyara, Tehsil-Waidhan, Dist-Singrauli Madhya Pradesh, Pin-486886
3	E mail address	sachin.mohapatra@relianceada.com
4	Name of the Nodal officer (not below the rank of DGM/Dy.CE/or equivalent) dealing with ash / environment management and designation	Mr. Sachin Mohapatra Station Director
5	Telephone No	07822-305040
6	Fax No.	07822-305620
7	Capacity of the Thermal Power station (MW)	3960 MW
8	Details of Number of units and capacity of each unit	6 X 660 MW
9	Coal Consumption in 2020-2021 (Million tonnes)	18.22 Million Metric Tonnes (MMT)
<b>A. Ash Generation in 2020- 2021 (in tonnes).</b>		
10	Bottom Ash	1005403
11	Fly Ash	4021613
	<b>Total A (10 and 11):</b>	<b>5027016</b>
<b>B. Ash Unutilised (in tonnes)</b>		
12	Ash Pond disposal	<b>2809464</b>
13	Ash yard	.....
14	Ash Dump	.....
	<b>Total B (12 to 14):</b>	<b>2809464</b>

<b>C. Ash Utilization in 2020- 2021 (in tonnes)</b>						
	Purpose for which ash is utilized	Target (as per action plan)	Actual			
			From ESP Dry Ash (1)	From Pond Ash (2)	From Bottom Ash (3)	Total (1+2+3)
15	Ash pond dyke raising	...	1687290	...	410486	2097776
16*	Cement industry	...	26670	...	...	26670
17	Land fill	...	89550	...	...	89550
18	Own Brick Unit	...	1400	...	...	1400
19*	Outside Brick units other than brick kilns	...	...	...	...	...
20*	Brick Kilns	...	...	...	...	...
21	Own ash based products (other than bricks)	...	...	...	...	...
22	Outside ash based products	...	...	...	...	...
23*	Road and Flyover Embankments	...	...	...	...	...
24*	Back filling of mines and Mixing Ash with OB	...	...	...	...	...
25	Agriculture	...	...	...	...	...
26	Ready mix concrete	...	521	...	...	521
27	Asbestos	...	...	...	...	...
28*	Exports	...	...	...	...	...
29	Others	...	...	...	...	...
	(i) Fly Ash for testing purposes in Coal Mines	..	1440	...	...	1440
	(ii) Cenosphere	..	195	...	...	195
	(iii)Agriculture	..	...	...	...	...
	<b>Total C (15 to 29)</b>		<b>1807066</b>	<b>...</b>	<b>410486</b>	<b>2217552</b>
<b>D. Reason for variation from the target.</b>						
<p>I. There is no cement plant in the vicinity of SPL, all the cement plants are located beyond 250 KM and the present road condition is very poor.</p> <p>II. Total peak demand of fly ash by the above cement plant is around 9.1 Million Ton/ year, where as Singrauli region generates more than 25.2 Million Ton/ year of fly ash, ie. 280% of the requirement.</p> <p>III. The change in fly ash lifting dynamics from different power plants by the cement industries is not going to change the over all ash utilization scenario in the region because the total fly ash consumption is fixed for the cement industries respective of the locations from where they are lifting the fly ash making Pozzolana Portland cement.</p> <p>IV. There is no substantial demand of fly ash in road construction work in the region.</p> <p>V. Most of the coal mines of M/s NCL are in operation hence there is no demand of fly ash in back filling of abandoned mines. NCL has allocated one abandoned mine "Gorbi" for the purpose of ash filling to NTPC subject to MoEF &amp;CC approval.</p> <p>VI. We are also in discussion with major cement plants for long term agreement.</p> <p>VII. Lack of awareness among the construction agencies about the beneficial use of ash in different areas.</p> <p>VIII. Due to these challenges a large quantity of ash remains unutilized and is being disposed of in the ash dykes.</p>						

<b>E. Remedial Measures taken.</b>	
I.	Made Fly Ash available free of cost.
II.	NOC obtained from MPPCB for filling of ash in low lying area within plant premises.
III.	Post in principle approval of the transportation cost sharing proposal by CERC on 23 <sup>th</sup> March 18, SPL has initiated the process of entering in to long term agreement with cement manufactures for the lifting of fly ash from SPL on sharing of transportation cost. NIT is already issued and presently bids are under evaluation.
IV.	Inside the plant and township for all CLSM 50% of sand quantity is replaced with the bottom ash and 30 to 40% of cement quantity is replaced with fly ash.
V.	Various fly ash awareness campaign and workshops have been organized at SPL and nearby villages for making public aware about fly ash usage and motivating them to come forward as an entrepreneur.
VI.	Various meetings organized with the cement industries with an objective to increase the fly ash lifting from the plant.

<b>F. Quantity in ash pond.</b>				
30	Estimated quantity of Pond Ash in active ash pond (Pond in use) as on 31.03. 2021 (Million tonnes)	22158503		
<b>G. Ash Pond Details.</b>				
31	Total area ear marked for ash ponds (ha)	Forest Area	Non forest Area	Total
		NIL	325 Ha	325 Ha
32	Ash ponds already filled up and reclaimed (ha)	NIL		
33	Ash ponds already filled up but yet to be reclaimed (ha)	NIL		
34	Ash ponds in use (ha) (Active ash ponds)	325 Ha		
35	Area earmarked for ash ponds but ash ponds yet to be constructed (ha)	Nil		
<b>H. Dry fly ash collection facilities.</b>				
36	Dry fly ash collection facility available	Yes, Silo has been provided with pneumatic ash conveying system.		
37	If yes, for how many units	For all the 6 operational activities.		
<b>I. Dry fly ash storage.</b>				
38	Daily Ash Generation (TPD)	Capacity of storage as on 31.03.2021 (tonnes)	Capacity proposed if any in 2021-22 (tonnes)	
	Total Ash: 2000 (avg.) from each unit Dry Fly Ash: 1600 (avg.) from each unit	8 Nos. of dry fly ash silos are installed with a capacity of 1200 MT each. The unused fly ash along with the bottom ash is disposed to the ash pond in wet mode.	...	
<b>J. Capital Expenditure. (Rs. Lakh)</b>				
	Item	Expenditure in 2020-21 (Rs. Lakh)	Budgetary provision In 2021-22 (Rs. Lakh)	
39	Bottom ash collection facility	95.00	98.26	
40	Dry fly ash storage	175.93	182.36	

<b>K. Dispute Settlement Committee.</b>		
41	No. of meetings held in 2020-21	No dispute with the users.

<b>L. Provision regarding supply to the brick kilns</b>		
42	Whether the Thermal Power Station is maintaining month wise records of ash made available to each brick kiln.	Records are maintained, but no brick kiln has approached for the supply of fly ash.
43	If yes, how many brick kilns have been supplied with fly ash	Nil

<b>M. Mode of Transport for ash (Strikeout whichever not applicable)</b>		
44	Dry Ash	Bulkers
45	Wet Ash	Pipeline transportation to ash pond for wet disposal.

<b>N. Promotional Measures</b>				
		No. of meetings/ workshops/ exhibition held during 2020-21	Amount spent in 2020-21 (Rs. Lakh)	Outlay for 2021- 22 (Rs. Lakh)
46	Public Awareness Campaign	...	...	...
47	Exhibitions	.....	....	....
48	Seminars / Workshops	01	0.3	1.0
49	Advertisement in Newspapers	.....	....	....
50	Advertisement in TV	...	...	...
51	Advertisement in Radio	...	...	...
52	Others (please specify) Trilingual Brochure on use of Ash in Agriculture	...	...	...
	<b>Total N (46 to 52)</b>	<b>01</b>	<b>0.3</b>	<b>1.0</b>

<b>O. Administrative measures taken</b>		
	<b>Administrative Measures</b>	<b>Outcome</b>
53	Meeting with brick manufacturers	Regular meetings with Fly Ash Brick Manufacturers
54	Meeting with State/Central Government agencies	Regular meeting with District Administration/ MPPCB-RO, Office-Singrauli for promoting Fly Ash utilization in Singrauli area. Meeting with NHAI, PWD & NCL officials for using ash in road construction and filling of abandoned mines.
55	Any other measure (please specify)	....

**Signature:**  
**Name: Mr. Sachin Mohapatra**

**Designation: Station Director**

**\* FORMAT FOR ANNEXURES**

**Annexure - I**

Name of bricks units/ bricks kilns to which fly ash supplied between 01.04.2020 and 31.03.2021

<b>S. No.</b>	<b>Name of the unit and address</b>	<b>Tel. No. if any</b>	<b>Quantity supplied (Tonnes)</b>
<b>A. Brick kilns</b>			
1	NIL	...	...
	<b>Sub Total A:</b>		
<b>B. Brick units</b>			
1	Own brick plant unit	9770691674	1400
	<b>Sub Total B:</b>		<b>1400</b>
	<b>Grand Total:</b>		<b>1400</b>

**Annexure – II**

Name of cement units to which fly ash supplied between 01.04.2020 and 31.03.2021

<b>S. No.</b>	<b>Name of the cement unit</b>	<b>Tel. No. if any</b>	<b>Quantity supplied (Tonnes)</b>
1	M/s Birla Cement	7611125740	16430
2	M/s Prism Cement	9584464056	9560
3	M/s JP- Rewa Cement	.....	560
4	M/s JP- Bela Cement	.....	120
	<b>Total: 03</b>		<b>26670</b>

**Annexure – III**

Name of road project to which fly ash supplied between 01.04.2020 and 31.03.2021

<b>S. No.</b>	<b>Name of the road project</b>	<b>Quantity supplied (Tonnes)</b>
	NIL	
	<b>Total:</b>	

**Annexure - IV**

Name of Hydropower Project to which fly ash supplied between 01.04.2020 and 31.03.2021

<b>S. No.</b>	<b>Name of the Hydropower Project</b>	<b>Quantity supplied (Tonnes)</b>
1	NIL	
	<b>Total :</b>	

**Annexure – V**

Name of abandoned mines where fly ash are back filled between  
01.04.2020 and 31.03.2021

<b>S. No.</b>	<b>Name of the mines</b>	<b>Open cost/ Underground</b>	<b>Quantity unutilised for back filling (Tonnes)</b>
1	NIL		
	<b>Total:</b>		

**Annexure – VI**

Country to which fly ash was exported between  
01.04.2020 and 31.03.2021

<b>S. No.</b>	<b>Name of the country</b>	<b>Quantity (Tonnes)</b>
	NIL	
	<b>Total:</b>	

**Guidelines for filling up the Compliance Report**

<b>Sl. No.</b>	<b>Item</b>	<b>How to fill up</b>
1.	3	If there is no e-mail address the entry should be 'Nil'
2.	8	No. of units should be represented as follows: 2 x 210 MW, 1x500 MW, 3x110 MW
3.	C	Target: The figures should be as indicated to the Ministry originally. No change should be made. Put (-) if the utilization is nil.
4.	17	Land fill, should not include ash ponds disposal.
5.	24	Back filling of mines. Applicable only if the mine is identified by the concerned authority as fit for back filling. This should not include ash slurry pumped into cavities of quarries which has been converted into ash pond by raising bandhs.
6.		Total B and total C should add up to total of A.
7.	D&E	If required use additional sheet.
8.	28	The figures should be in million tonnes, cubic metres should <b>not</b> be used.
9.	29	Total area as per land use plan approved by competent authority. Forest area is the forestland as per Forest (Conservation) Act which was acquired for dumping ash/ ash pond. Areas should be in hectares and <u>not</u> in any other unit. Item 31 should be sum of item 32 to 35.
10.	39 & 40	Maintenance Expenditure should not be included.
11.	*	Provide information wherever applicable as per Annexure.

**Note:**

1. The period 2020-21 means period between 1.04.2020 to 31.03.2021.
2. The information on brick kilns/ units should be on annual basis for each unit.
3. Month wise figures will not be accepted.

04-Aug-2021

**Recommendations of the Oversight Committee in its Fourth quarterly report for  
Compliance by the various stakeholders**

**1. Thermal Power Plants:**

SI	Condition	Status
<b>A</b>	The thermal power plants shall ensure that 100% fly ash utilization of the fly ash shall be ensured by them as per the Fly ash Notification.	Presently, our average fly ash utilization is more than 89% . Fly-ash utilization is being increased by further tie ups and/or long-term agreements with the cement manufacturers / industries, brick manufacturers etc. Moreover, the approval from MPPCB is awaited. <b>Team from Regional office has been revisited the site of low laying area on 30/07/2021.</b>
<b>B</b>	For the achievement of new emission norms, equipments like FGD, SCR/ SNCR etc shall be got installed as per the time lines provided to them by the CPCB.	We have already commenced the project work required for FGD. <b>Ref:</b> Current progress report is enclosed as <b><u>ANNEXURE - I</u></b>
<b>C</b>	Fly ash dyke shall be monitored regularly for their strength through some reputed organizations. The design should be safe and timely maintenance should be regularly ensured.	The visit of experts from reputed IIT-BHU is organized to study and monitor the ash dyke strength (including other aspects). <b>Stability report of Ash dyke is enclosed as <u>ANNEXURE - II</u></b>
<b>D</b>	Air borne fly ash from the ash dykes, specifically during summers should be controlled through arrangements of water sprinkling, vegetation and	Our ash dyke has vegetation that prevents air borne fly ash from the ash dykes,

	other scientific measure.	especially during summers.
<b>E</b>	NTPC- VSTPS shall ensure to start disposal of the fly ash in the abandoned Gorbi mines, and shall complete the related studies at the earliest.	Not applicable
<b>F</b>	Health checkup of villagers through mobile medical van be conducted regularly for the detection of the occupational diseases like silicosis, fluorosis etc. and treatment be provided under CSR activities. Record should be maintained and made available to the district health authorities.	Due to the extant COVID-19 pandemic we haven't been able to conduct any medical camp since April, 2020. This fiscal year we intend to do the same.
<b>G</b>	The thermal power plants namely, M/s Essar Power MP Ltd. and M/s Sasan Power Ltd. shall deposit with MPPCB the remaining amount of environmental compensation of Rs. 9 Cr., and Rs. 8 Cr. respectively out of the levied amount of Rs. 10 Cr. M/s NTPC- Vindhyachal, has however obtained a stay from Hon'ble Supreme Court.	Not applicable
<b>H</b>	NPTC- Vindhyachal shall complete the dredging of the Rihand reservoir for the removal of the ash flown into it due to breach of its ash dyke and to complete it within 3 months' time.	Not applicable
<b>I</b>	NPTC- Vindhyachal should complete the studies of making RCC wall around the ash dyke through IIT Roorkee / IIT Delhi and submit the report for further consideration on its technical viability. Similarly studies / action should be initiated for the construction of Ash mounds.	Not applicable
<b>J</b>	All the TPPs / industries shall calibrate all the CAAQMS and CEMS installed by them in 3 months (if not done recently) and submit the report to the committee. Such reports will be useful in checking the error percentage in the results.	The calibration for all CAAQMS and CEMS are being done regularly.  The calibration certificate for the period April – June 2021 is annexed herewith and marked as <b><u>ANNEXURE – III</u></b>

# SDFGD -SOX Projects

Status --30<sup>th</sup> June , 2021

17/03/2021

# Semi Dry FGD Project (1X150 MW) – Mahan

Start: 17-Feb-20

Commissioning: 16-Dec-21

## Project Partners:

EPC : ISGEC Heavy Engineering

Consultant: Black & Veatch

## Progress Highlights:

- Overall Project Progress achieved 56.93% against planned progress of 90.56% as on 30<sup>th</sup> -June-2021.
- Drawings and Document Status submitted 78.77% (193 Nos.) Drawing/Docs against planned submission of 95.51% (234 Nos.)
- Fabrication & preassembly work completed in June is 61 MT and cumulative is 293.9 MT till date.
- Ordering for the major Bought outs 98% completed by June-21. Balance materials will be ordered by the end of July-21.
- RCC concreting achieved in June-2021 is 204.2 CuM, cumulative 2211 CuM till date.
- Erection work in June month is 35MT & cumulative 48 MT is done.
- Total working man-hours till date is 397952 Hr.
- Total working man hours in the month of June was 75,600 Hr.

## REMARKS:

- As per detailed discussion on Civil work, ISGEC informed that balance quantity as of today is approx. 4000 cum of which MCC building is 1161 cum, Flue gas duct foundation 336 cum, Pipe rack foundation 770 cum, Compressor room and ECW Building 170 cum, RCC Road and Paving work 1000 cum.

# Semi Dry FGD Project (1X150 MW) – Mahan

- ISGEC Confirmed that by July and August plan, 2200 Cum RCC Concreting will be done which shall cover major Foundation work. As per plan Bag filter Foundation work shall be completed by 10<sup>th</sup> July 2021, Hydrated lime silo by 30<sup>th</sup> Aug 2021, By product silo by 15<sup>th</sup> Aug 2021, Booster Fan One number by 15<sup>th</sup> July 2021 and 2<sup>nd</sup> by 30<sup>th</sup> July 2021, MCC Room Building 1<sup>st</sup> Floor by 20<sup>th</sup> August 2021, 2<sup>nd</sup> Floor by 30<sup>th</sup> September 2021 and Roof Completion by 30<sup>th</sup> October 2021, Chimney to Road Duct foundation work by 30<sup>th</sup> July 2021 and Compressor Room by 30<sup>th</sup> August 2021.

<b>Civil Work Progress Status</b>					
<b>S.no</b>	<b>Activity</b>	<b>Excavation</b>	<b>PCC</b>	<b>RCC</b>	
1	Compressor room	Under progress	-----	-----	
2	Hydrated Lime Silo	Completed	Completed	Back filling work under progress	
3	Flue gas duct foundation area	Under Progress	under progress	RCC Under progress	
4	Scrubber	completed	completed	Back filling work up to 100% completed. Raft RCC 94% done.	
5	By Product Silo	completed	Completed	By Product back filling work up to bottom of plinth beam 95% completed and plinth beam shuttering work completed	
6	MCC Building	Completed	Completed	Plinth beam reinforcement & shuttering work under progress	

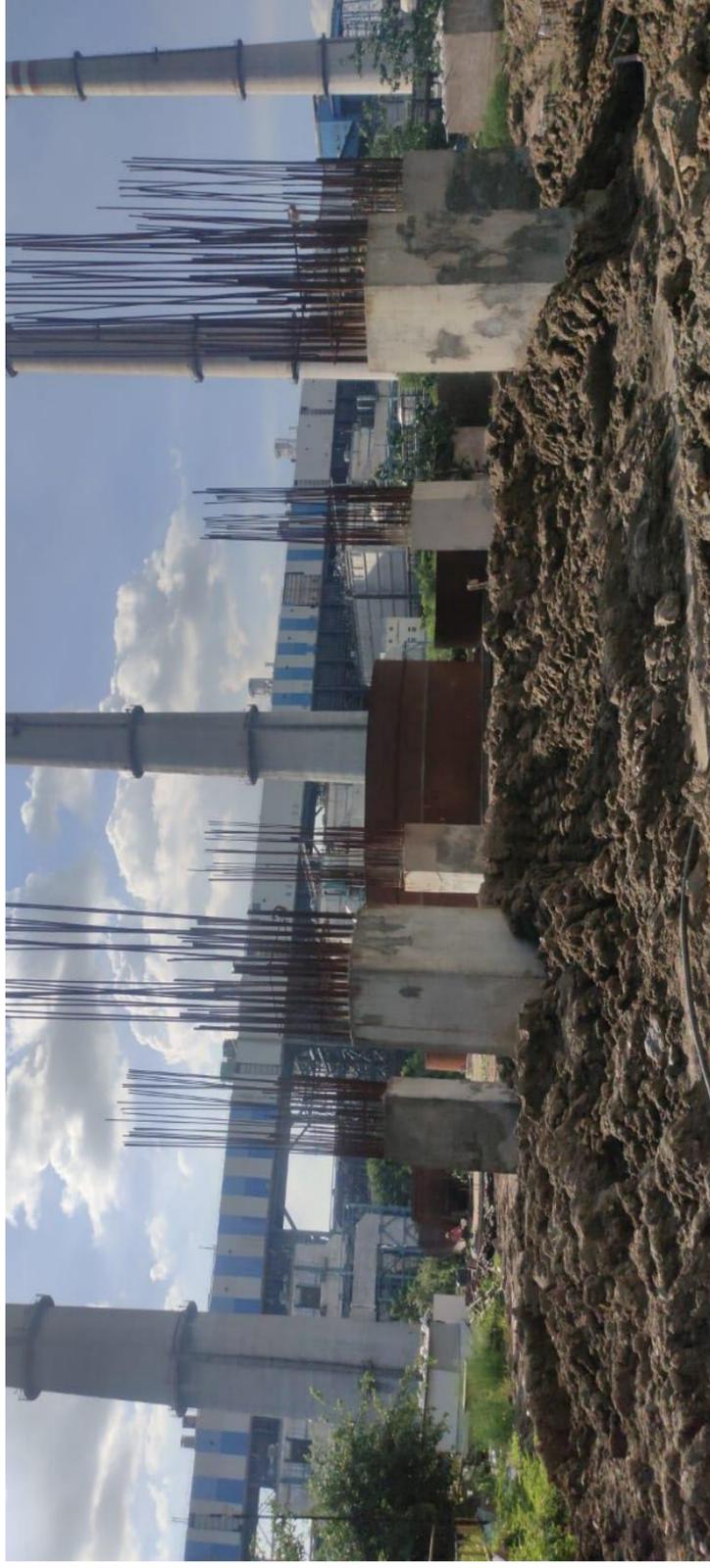
# Site Photographs – Mahan FGD Project



**MCC BUILDING AREA**



**BAG FILTER AREA FOUNDATION**



**HYDRATED LIME SILO**



**BY PRODUCT SILO AREA**

# Site Photographs – Mahan FGD Project



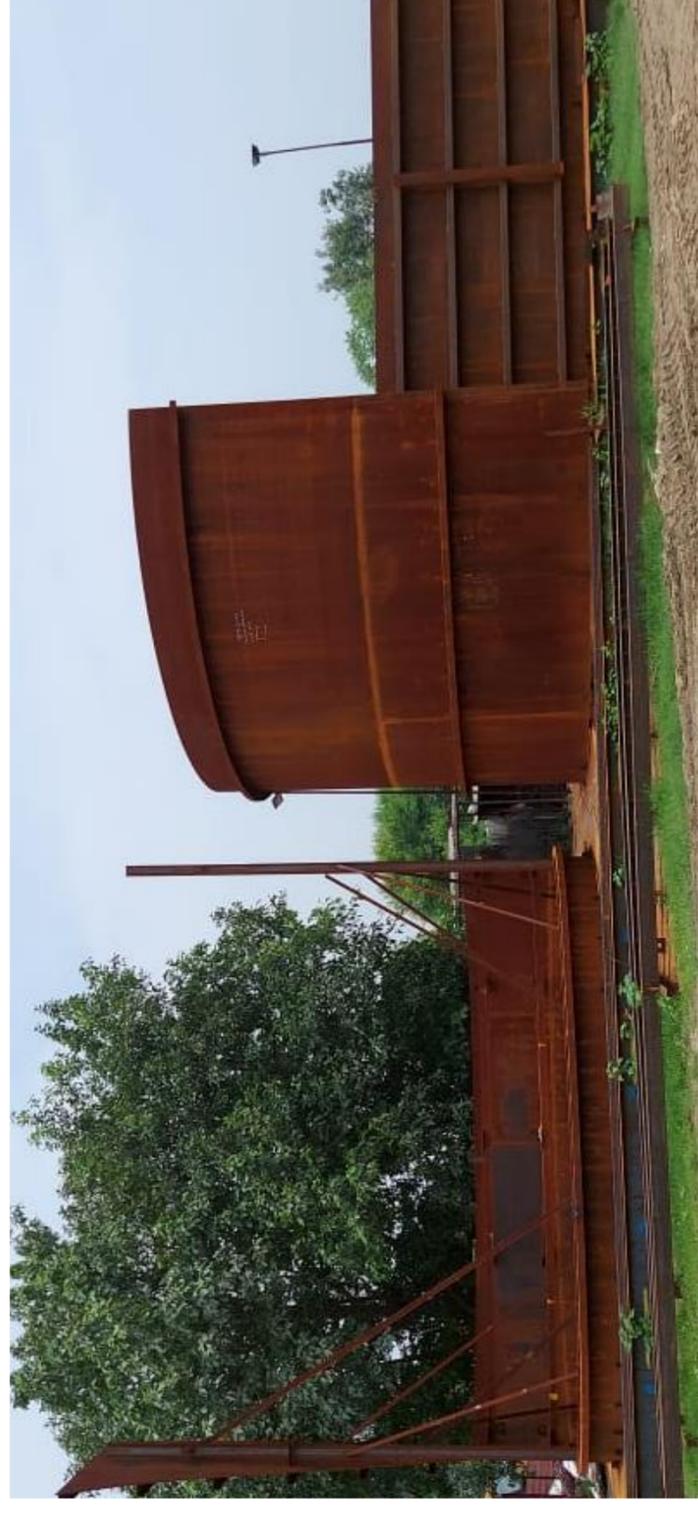
**MAKEUP WATER TRANSFER TANK**



**BOOSTER FAN FOUNDATION AREA**



**FABRICATION YARD PICTURES**

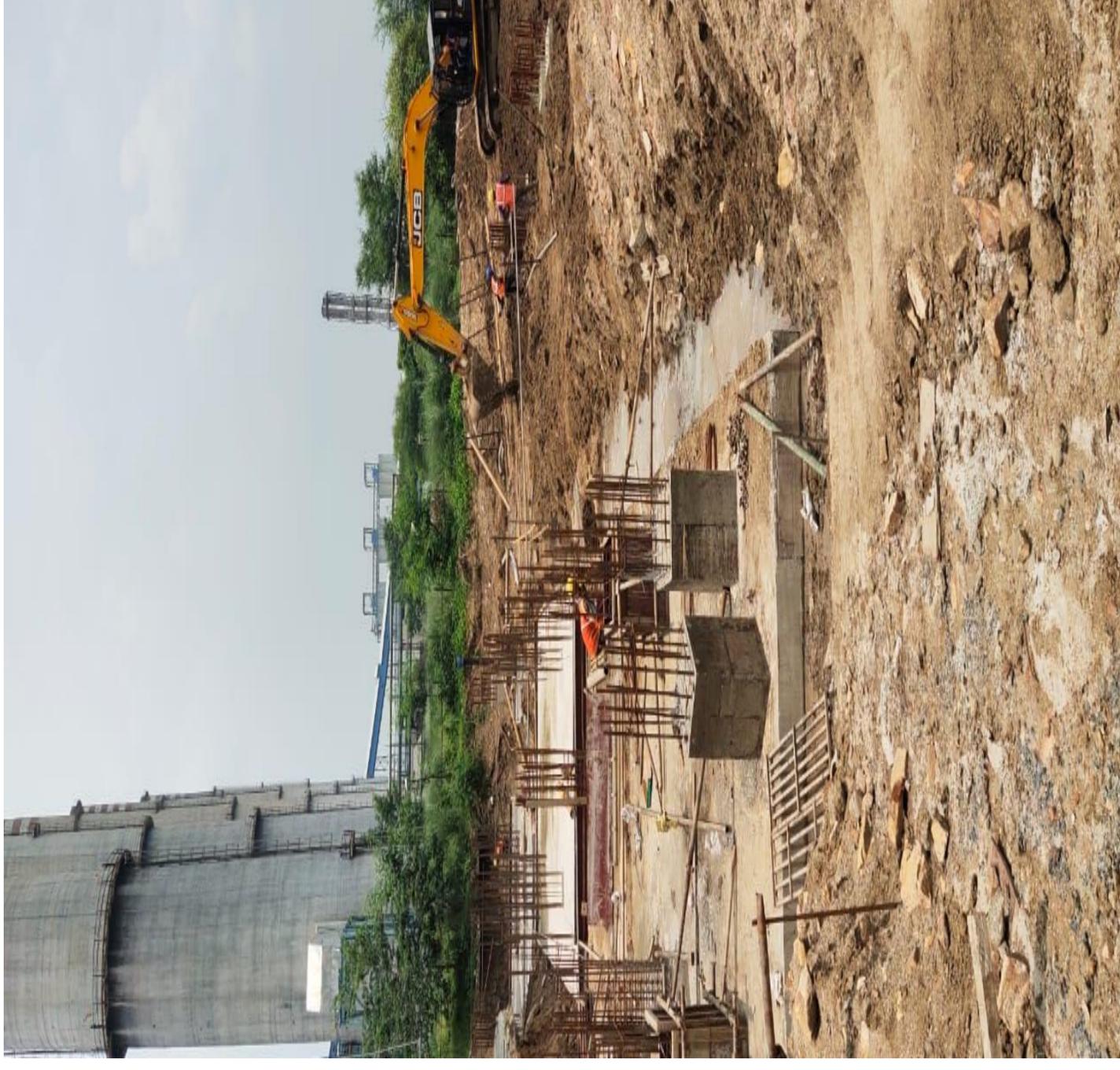


# Site Photographs – Mahan FGD Project

**COMPRESSOR ROOM AREA**



**DUCT FOUNDATION AREA**



# Site Photographs – Mahan FGD Project

SCRUBBER SUPPORT STRUCTURE ERECTION



SPIDER BAR INSPECTION & LOAD TEST



# Site Photographs – Mahan FGD Project

**PAINTING WORK AT SITE**



**Thank You**



भारतीय  
प्रौद्योगिकी  
संस्थान  
काशी हिन्दू विश्वविद्यालय



INDIAN  
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BANARAS HINDU UNIVERSITY

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**ANN. 2 HINDALCO**

**Prof. Arun Prasad**

*B.Sc. Engg. (Civil), M.Sc. Engg. (Geotechnical), Ph.D., Post-Doctoral (UPM, Malaysia)*

Professor in Geotechnical Engineering

Department of Civil Engineering

Indian Institute of Technology (BHU)

VARANASI – 221 005

Visiting Research Scientist, Nanyang Technological University, Singapore

Mob: +91-9532103389; E-mail: [aprasad.civ@iitbhu.ac.in](mailto:aprasad.civ@iitbhu.ac.in)

*Ref. No. IIT(BHU)/CE/2021-22/266*

Date: 21-06-2021

**Shri Abhayanand Chaturvedi**

**General Manager (Common Technical Services)**

**Hindalco Industries Limited**

**Unit Mahan Aluminium**

**NH 75-E, Bargawan**

**Singrauli – 486886 (MP)**

**Sub: Safety and Stability of Ash Dyke and Raw Water Reservoirs**

**Ref:** Your letter # HIL/MAHAN/2021/05/01, dated: 28-05-2021

**Dear Sir,**

A site visit was made for a physical verification on the subject above. The soil test report was also referred. Based on the site visit and soil test report, it appears that the ash dyke and raw water reservoirs are safe and stable. Few precautions and minor repair work are also suggested.

A detailed report on this is enclosed herewith.

Should you need any clarification, please feel free to contact me.

With regards

*Arun Prasad*

**(Arun Prasad)**

**Professor**

Department of Civil Engineering  
Indian Institute of Technology (B.H.U.)  
Varanasi-221005

**Report  
on  
Site Visit for  
Safety and Stability of Ash Dyke &  
Raw Water Reservoirs**

**CLIENT:**

**Hindalco Industries Limited  
Unit Mahan Aluminium  
NH 75-E, Bargawan  
Singrauli-486886 (MP)**



(Ref No.: IIT (BHU)/CE/2021-22/ 066 , Dated: 21-06-2021)

**Arun Prasad, Ph.D.**  
**Professor in Geotechnical Engineering**  
**Department of Civil Engineering**  
**Indian Institute of Technology (BHU)**  
**Varanasi – 221005**  
**Email: [aprasad.civ@iitbhu.ac.in](mailto:aprasad.civ@iitbhu.ac.in)**

**REPORT ON SITE VISIT  
FOR SAFETY AND STABILITY OF ASH DYKE &  
RAW WATER RESERVOIRS**

A visit to the Ash Dyke and Raw Water Reservoirs of Hindalco Industries Ltd., Mahan, Singrauli (MP) was made as detailed below:

**Date of visit:** 9<sup>th</sup> June 2021

**Time:** 13.30 – 16.30 Hrs

**Members Present:**

1. Arun Prasad, Professor (Geotech. Engg.), Dept. of Civil Engineering, IIT (BHU) Varanasi.
2. Shri Abhayanand Chaturvedi, General Manager (Common Technical Services), Hindalco Industries Ltd. (henceforth called HIL), Unit Mahan Aluminium, and Team Members

Further, a meeting was also held with Shri Ratan Somani, President and Unit Head, Hindalco Industries Ltd. (Mahan Aluminium).

**INTRODUCTION**

HIL has constructed two ash dykes (Ash Dyke-1, and Ash Dyke -2), and two Raw Water Reservoirs for its 6 x 150 MW (900 MW) Power Plant of MAHAN Aluminium at Bargawan (Singrauli), MP.

**SCOPE**

1. Study the soil test report for the safety and stability of ash dyke.
2. To assess the safety and stability of Ash Dyke-1 and 2.
3. To suggest suitable remedial measure(s) if ash dyke is found to be unstable.
4. To assess the safety of Raw Water Reservoirs (based on visual inspection only).

**OBSERVATION**

**(A) Ash Ponds-1 and 2**

1. Two Ash Ponds (Ash Pond-1 and Ash Pond-2) were constructed in Phase I, sharing a common embankment. In future, as and when needed, Ash Ponds have been proposed to be constructed in three phases (Phase II, III, and IV). A general view of the Ash Ponds- 1 and 2 is shown in Figure 1.



**Figure 1 A general view of Ash Ponds**

(Source: <https://www.google.co.in/maps/@24.2323026,82.428399,2354m/data=!3m1!1e3> Retrieved: 13-06-2021)

2. Soil tests (DCPT and SPT) were carried out on ash dykes at locations shown in Fig. 2. These tests were done with a view to assess the homogeneity in terms of soil density, permeability etc.



**Fig. 2 Locations of soil tests**

3. The soil test results shows that the ash dykes are homogeneous as there is not much variation in density, shear strength parameters, and permeability. SPT numbers are also in accordance with the soil parameters.
4. Ash dykes are 13 m in height with an upstream and downstream slope of 1:2. The upstream is lined with LDPE film and covered with concrete blocks with grouting of the

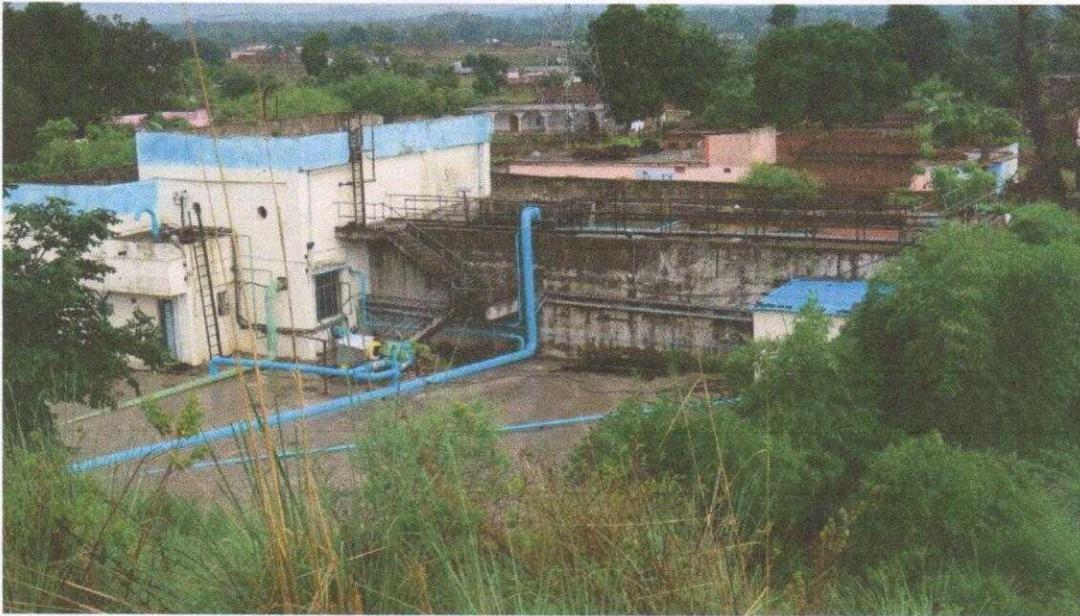
joints (Fig. 3 (a) and (b)). The concrete blocks appear firmly fixed on the upstream slope. A decantation well can also be seen in the photograph (Fig. 3(a) that appears to be working satisfactorily in removing ash water from the pond to the water recovery unit (Fig. 3(c)).



(a)



(b)



(c)

**Figure 3 (a) Lining of upstream with LDPE, covered with concrete blocks, and grouted, (b) A close up of the upstream lining, (c) Ash water recovery unit**

5. As of present, the Ash Pond-1 is filled-up to its full capacity (Fig. 4) with a provision for 1.0 m freeboard and the second pond (Ash Pond-2) is in operation.



(a)



(b)

**Fig. 4 Ash Pond-1; (a) A General View, (b) Close-up view showing the freeboard**

6. The top (crest) of the dyke should be provided with a PCC/WBM road to facilitate the easy movement of vehicles for the routine inspection of the ash pond (Fig. 5).



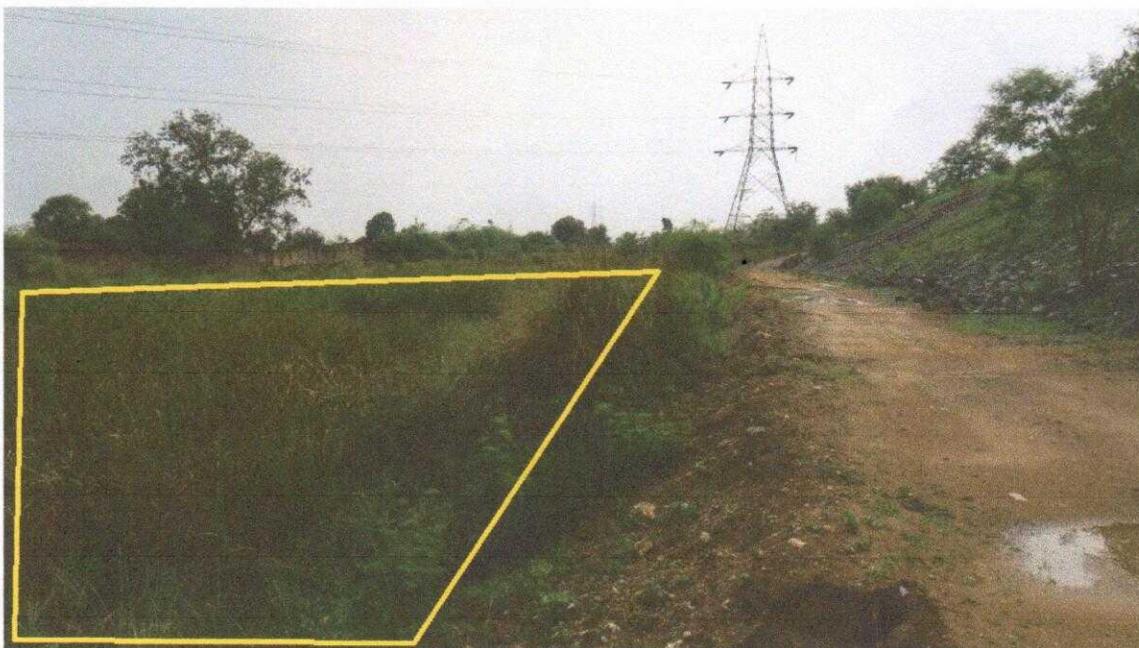
**Fig. 5 Top (crest) of dyke with no PCC/WBM road**

7. The downstream slope is planted with local shrubs and appears to be in a healthy condition (Fig. 6). The stone pitching is in a well maintained condition. Few medium sized trees can also be seen on the slope and they need to be removed immediately as they are likely to be uprooted during monsoon or high wind causing damage to the dyke.



**Fig. 6 Downstream slope with local shrub**

8. An earth embankment (bench) is recently provided near the toe of the downstream slope that doubles as a road for the easy movement (Fig. 7). This will obviously add to the stability of the ash dyke as a natural low lying area (demarcated by yellow lines) exists close to the toe (Figs. 7 & 8). However, it should also be provided with a PCC/WBM road as rain cuts are visible at few locations (Fig. 8). A toe drain is also needed that can be connected to the low lying area using hume pipes at suitable interval.



**Fig. 7 An earthen embankment constructed adjacent to the toe of downstream slope**



**Fig. 8 Rain cuts in the newly constructed earthen embankment**

**(B) Raw Water Reservoir (RAW)**

1. Two RAWs have been constructed to meet the water demand of the HIL, and share a common embankment. A general view of the RAWs is shown in Fig. 9.



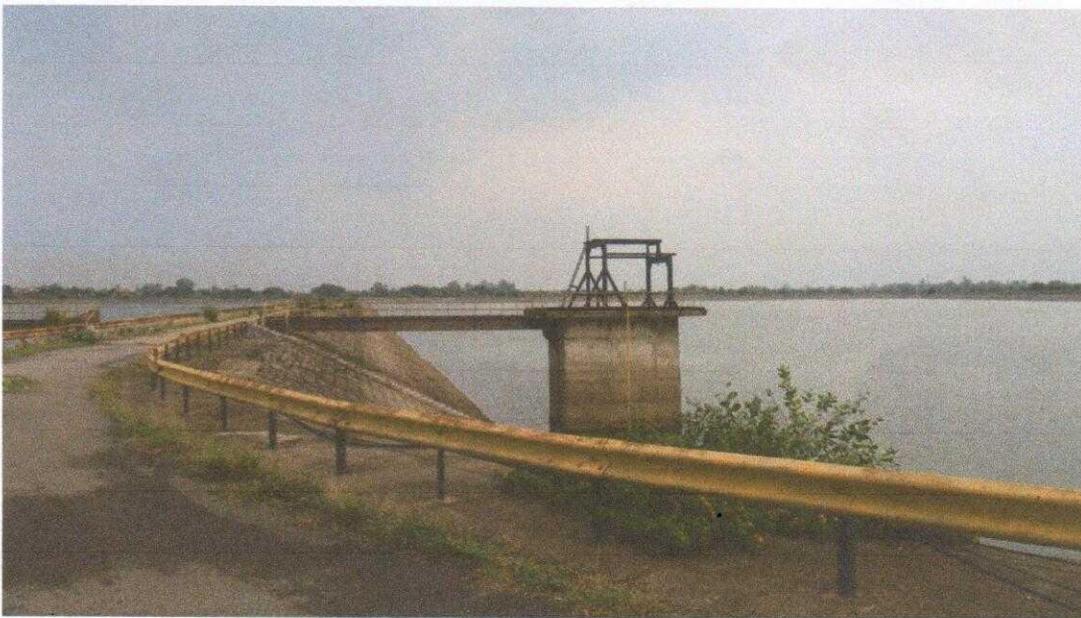
**Fig. 9 Raw water reservoirs**

(Source: <https://www.google.co.in/maps/@24.2173205,82.4524318,2902m/data=!3m1!1e3>, Retrieved on 13-06-2021)

2. The upstream slope of the RAWs is lined with HDPE, covered with concrete blocks and grouted to form a water tight structure, and appear to be in healthy condition (Fig. 10).



(a)



(b)

**Fig. 10 Raw water reservoirs showing upstream lined with HDPE and covered with concrete blocks**

3. At few locations on the upstream slope, the concrete blocks have been dislodged (Fig. 11). It should be repaired on n urgent basis as it can lead to the damage of the LDPE liner as well damage due to the UV rays of the sun.



**Fig. 11 A photograph showing dislodged concrete blocks**

4. Also, few medium sized trees have grown on the upstream slope and need to be removed immediately (Fig. 12).



**Fig. 12 A photograph showing a medium sized tree on the upstream slope**

5. The downstream slope of the RAWs is covered with grass/shrub and well laid stone pitching (Fig. 13).



**Fig. 13 Downstream slope of the RAWs**

## **CONCLUSION**

### **(A) Ash Ponds**

Based on the site visit and visual inspection of the ash dyke, it appears to be in a healthy condition and looks to be stable. Few medium sized trees have grown on the downstream slope and need to be removed immediately. PCC/WBM roads are desirable on the dyke crest and toe. A toe drain is desirable at the downstream slope to facilitate movement of rain water without causing any damage to the earthen embankment.

### **(B) Raw Water Reservoir**

The RAWs (upstream and downstream slopes) appear to be in a health condition. At few locations, the concrete blocks over the HDPE liner are dislodged. These should be affixed immediately. Few medium sized trees growing on the downstream slope should also be removed.

*Ar*  
*21-06-2021*

**(Arun Prasad)**

**Professor & Consultant**

**Professor**

Department of Civil Engineering  
Indian Institute of Technology (B.H.U.)  
Varanasi-221005

**Place: IIT (BHU) Varanasi**

**Date: 21<sup>st</sup> June 2021**

**ANN.3 HINDALCO**



**CALIBRATION CERTIFICATE**

Certificate No: NKSS/CEMS/HIL/2021/173/C

Date of Issue: 12-07-2021

Customer : M/s. Hindalco Industries limited Bargawan MLP.

**Instrument Details:**

Instrument : Online Stack SPM Analyzer  
Make : Forbes Marshall  
Model : DCEM 2100  
Serial No. : 733

Station Name : Stack- 1  
Date of Calibration : 09-07-2021  
Due Date : 08-10-2021

**Calibration Details:(Test Data)**

Calibration Date	Zero % Opacity	100% Opacity	Remarks
09-07-2021	00.02%	98.7%	Dust monitor model no DCEM 2100 is calibrated successfully

**Result:** The Calibration of above instrument is performed and it meets the acceptance criteria.

**Operational Checks:-**

Normalizing inputs	Temperature	Ok	Serial Comms.	Ok	Plant Status	Ok
	Span Check 100%	Ok	Data Valid	Ok	Contact	Ok
	Alarm Level 1/2	Ok	Alarm Led	Ok		

Calibrated By:  
**Dhaniram Kachhi**  
Service Engineer



Reviewed By:  
**Ram kishan Pal**  
Sr. Service Engineer

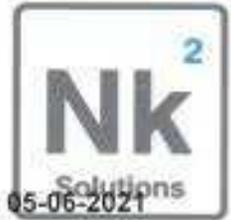
**NK SQUARE SOLUTIONS**

Regd. Office : 83/3, Saraswati Nagar Colony, Lothukunta, Secunderabad, Telangana State - 500 015

Corp. Office : 501 Yashoda Pride, Above South Indian Bank, HIG 541 & 542, 6th Phase, KPHB Colony, Hyderabad - 500 072

Ph: +91 40 48514821 E-mail: info@nksquare.com , Website : nksquare.com

## CALIBRATION CERTIFICATE



Certificate No : NKSS/CEMS/HIL/2021/197/H

Date of Issue : 05-06-2021

Customer : M/s. Hindalco Industries Ltd., Bargawan, Singrauli M.P.

### Instrument Details:

Instrument : Online Stack Gas Analyzer (SO<sub>2</sub>, NO<sub>x</sub>, CO)  
Make : SIEMENS  
Model : ULTRAMAT-23  
Serial No. : B5-009

Station Name : CEMS-1  
Date of Calibration : 01-06-2021  
Due Date : 30-09-2021

### Calibration Gas Details:

NO Gas : 746.0 ppm NO, Balance N<sub>2</sub>  
SO<sub>2</sub> Gas : 740.0 ppm SO<sub>2</sub>, Balance N<sub>2</sub>  
CO Gas : 373 ppm CO, Balance N<sub>2</sub>  
N<sub>2</sub> Gas : 99.999% purity

### Calibration Equipment Details:

Details	N <sub>2</sub> Gas Cylinder	SO <sub>2</sub> Gas Cylinder	NO Gas Cylinder	CO Gas Cylinder
Sl. No.	18931	19228	18900	18900
Expiry Date	23-02-2022	23-02-2022	23-02-2022	23-02-2022

### Calibration Details:

Parameter	Zero Calibration			Span Calibration		
	Standard Gas Concentration	Measured Value	% of Deviation	Standard Gas Concentration	Measured Value	% of Deviation
SO <sub>2</sub>	0.0 ppm	0.0 ppm	0	740.0 ppm	752.0 ppm	1.62
NO <sub>x</sub>	0.0 ppm	0.0 ppm	0	746.0 ppm	735.0 ppm	-1.47
CO	0.0 ppm	0.0 ppm	0	373.0 ppm	368.0 ppm	-1.34

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated By:

SSS *Dhaniram*

**Dhaniram kachhi**  
Service Engineer



Reviewed by:

*Ram Kishan*

**Ram kishan Pal**  
Sr. Service Engineer

### NK SQUARE SOLUTIONS

Regd. Office : 83/3, Saraswati Nagar Colony, Lothukunta, Secunderabad, Telangana State - 500 015

Corp. Office : 501 Yashoda Pride, Above South Indian Bank, HIG 541 & 542, 6th Phase, KPHB Colony, Hyderabad - 500 072

Ph: +91 40 48514821 E-mail: info@nksquare.com, Website: nksquare.com



## CALIBRATION CERTIFICATE

Certificate No: NKSS/CEMS/HIL/2021/173/C  
Customer : M/s. Hindalco Industries Ltd Baragawan M.P.

Date of Issue: 12-07-2021

### Instrument Details:

Instrument : Online Stack SPM Analyzer  
Make : Forbes Marshall  
Model : DCEM 2100  
Serial No. : 729

Station Name : Stack- 2  
Date of Calibration : 07-07-2021  
Due Date : 06-10-2021

### Calibration Details:(Test Data)

Calibration Date	Zero % Opacity	100% Opacity	Remarks
07-07-2021	00.03%	94.7%	Dust monitor model no DCEM 2100 is calibrated successfully

**Result:** The Calibration of above instrument is performed and it meets the acceptance criteria.

### Operational Checks:-

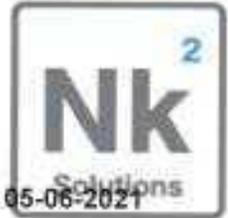
<b>Normalizing inputs</b>	Temperature	<b>Ok</b>	Serial Comms.	<b>Ok</b>	Plant Status	<b>Ok</b>
	Span Check 100%	<b>Ok</b>	Data Valid	<b>Ok</b>	Contact	<b>Ok</b>
	Alarm Level 1/2	<b>Ok</b>	Alarm Led	<b>Ok</b>		

 Calibrated By: <b>Dhaniram Kachhi</b> Service Engineer		 Reviewed By: <b>Ram Kishan Pal</b> Sr. Service Engineer
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### NK SQUARE SOLUTIONS

\*Regd. Office : 83/3, Saraswati Nagar Colony, Lothukunta, Secunderabad, Telangana State - 500 015  
Corp. Office : 501 Yashoda Pride, Above South Indian Bank, HIG 541 & 542, 6th Phase, KPHB Colony, Hyderabad - 500 072  
Ph: +91 40 48514821 E-mail: info@nksquare.com , Website : nksquare.com

## CALIBRATION CERTIFICATE



Certificate No : NKSS/CEMS/HIL/2021/198/H

Date of Issue : 05-06-2021

Customer : M/s. Hindalco Industries Ltd., Bargawan, Singrauli M.P.

### Instrument Details:

Instrument : Online Stack Gas Analyzer (SO<sub>2</sub>, NO<sub>x</sub>, CO)  
Make : SIEMENS  
Model : ULTRAMAT-23  
Serial No. : B5-027

Station Name : CEMS-2  
Date of Calibration: 01-06-2021  
Due Date : 30-09-2021

### Calibration Gas Details:

NO Gas : 746.0 ppm NO, Balance N<sub>2</sub>  
SO<sub>2</sub> Gas : 740.0 ppm SO<sub>2</sub>, Balance N<sub>2</sub>  
CO Gas : 373.0 ppm CO, Balance N<sub>2</sub>  
N<sub>2</sub> Gas : 99.999% purity

### Calibration Equipment Details:

Details	N <sub>2</sub> Gas Cylinder	SO <sub>2</sub> Gas Cylinder	NO Gas Cylinder	CO Gas Cylinder
Sl. No.	15552	15994	18894	18894
Expiry Date	23-02-2022	23-02-2022	23-02-2022	23-02-2022

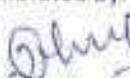
### Calibration Details:

Parameter	Zero Calibration			Span Calibration		
	Standard Gas Concentration	Measured Value	% of Deviation	Standard Gas Concentration	Measured Value	% of Deviation
SO <sub>2</sub>	0.0 ppm	0.0 ppm	0	740.0 ppm	754.0 ppm	1.89
NO <sub>x</sub>	0.0 ppm	0.0 ppm	0	746.0 ppm	734.0 ppm	-1.60
CO	0.0 ppm	0.0 ppm	0	373.0 ppm	372.0 ppm	-0.28

Accepted Tolerance:  $\pm 2\%$

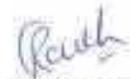
Result: The Calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated By:

  
Dhaniram Kachhi  
Service Engineer



Reviewed by:

  
Ram Kishan Pal  
Sr. Service Engineer

### NK SQUARE SOLUTIONS

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## CALIBRATION CERTIFICATE

Certificate No: NKSS/CEMS/HIL/2021/173/C  
Customer : M/s. Hindalco Industries ltd Baragawan M.P.

Date of Issue: 12-07-2021

### Instrument Details:

Instrument : Online Stack SPM Analyzer  
Make : Forbes Marshall  
Model : DCEM 2100  
Serial No. : 722

Station Name : Stack- 3  
Date of Calibration : 06-07-2021  
Due Date : 05-10-2021

### Calibration Details:(Test Data)

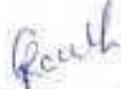
Calibration Date	Zero % Opacity	100% Opacity	Remarks
06-07-2021	00.01%	96.2%	Dust monitor model no DCEM 2100 is calibrated successfully

**Result:** The Calibration of above instrument is performed and it meets the acceptance criteria.

### Operational Checks:-

<b>Normalizing inputs</b>	Temperature	<b>Ok</b>	Serial Comms.	<b>Ok</b>	Plant Status	<b>Ok</b>
	Span Check 100%	<b>Ok</b>	Data Valid	<b>Ok</b>	Contact	<b>Ok</b>
	Alarm Level 1/2	<b>Ok</b>	Alarm Led	<b>Ok</b>		

  
Calibrated By:  
**Dhaniram Kachhi**  
Service Engineer

  
Reviewed By:  
**Ram Kishan Pal**  
Sr. Service Engineer

### **NK SQUARE SOLUTIONS**

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## CALIBRATION CERTIFICATE



Certificate No : NKSS/CEMS/HIL/2021/199/H

Date of Issue : 05-06-2021

Customer : M/s. Hindalco Industries Ltd., Bargawan, Singrauli M.P.

### Instrument Details:

Instrument : Online Stack Gas Analyzer (SO<sub>2</sub>,NOX, CO)  
Make : SIEMENS  
Model : ULTRAMAT-23  
Serial No. : B5-004

Station Name : CEMS-3  
Date of Calibration : 01-06-2021  
Due Date : 30-09-2021

### Calibration Gas Details:

NO Gas : 746.0 ppm NO, Balance N<sub>2</sub>  
SO<sub>2</sub> Gas : 740.0 ppm SO<sub>2</sub>, Balance N<sub>2</sub>  
CO Gas : 373.0 ppm CO, Balance N<sub>2</sub>  
N<sub>2</sub> Gas : 99.999% purity

### Calibration Equipment Details:

Details	N <sub>2</sub> Gas Cylinder	SO <sub>2</sub> Gas Cylinder	NO Gas Cylinder	CO Gas Cylinder
Sl. No.	18903	19215	18885	18885
Expiry Date	23-02-2022	23-02-2022	23-02-2022	23-02-2022

### Calibration Details:

Parameter	Zero Calibration			Span Calibration		
	Standard Gas Concentration	Measured Value	% of Deviation	Standard Gas Concentration	Measured Value	% of Deviation
SO <sub>2</sub>	0.0 ppm	0.0 ppm	0	740.0 ppm	745.0 ppm	0.67
NO <sub>x</sub>	0.0 ppm	0.0 ppm	0	746.0 ppm	740.0 ppm	-0.80
CO	0.0 ppm	0.0 ppm	0	373.0 ppm	367.0 ppm	-1.60

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated By:  Dhaniram kachhi Service Engineer		Reviewed by:  Ram Kishan Pal Sr. Service Engineer
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### NK SQUARE SOLUTIONS

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## CALIBRATION CERTIFICATE

Certificate No: NKSS/CEMS/HIL/2021/173/C  
Customer : M/s. Hindalco Industries ltd Baragawan M.P.

Date of Issue: 12-07-2021

### Instrument Details:

Instrument : Online Stack SPM Analyzer  
Make : Forbes Marshall  
Model : DCEM 2100  
Serial No. : 723

Station Name : Stack- 4  
Date of Calibration : 05-07-2021  
Due Date : 04-10-2021

### Calibration Details:(Test Data)

Calibration Date	Zero % Opacity	100% Opacity	Remarks
05-07-2021	00.01%	94.2%	Dust monitor model no DCEM 2100 is calibrated successfully

**Result:** The Calibration of above instrument is performed and it meets the acceptance criteria.

### Operational Checks:-

Normalizing inputs	Temperature	Ok	Serial Comms.	Ok	Plant Status	Ok
	Span Check 100%	Ok	Data Valid	Ok	Contact	Ok
	Alarm Level 1/2	Ok	Alarm Led	Ok		

  
Calibrated By:  
**Dhaniram Kachhi**  
Service Engineer



  
Reviewed By:  
**Ram Kishan Pal**  
Sr. Service Engineer

### NK SQUARE SOLUTIONS

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## CALIBRATION CERTIFICATE



Certificate No : NKSS/CEMS/HIL/2021/200/H

Date of Issue : 05-06-2021

Customer : M/s. Hindalco Industries Ltd., Bargawan, Singrauli M.P.

### Instrument Details:

Instrument : Online Stack Gas Analyzer (SO<sub>2</sub>, NO<sub>x</sub>, CO)  
Make : SIEMENS  
Model : ULTRAMAT-23  
Serial No. : B5-009

Station Name : CEMS-4  
Date of Calibration : 02-06-2021  
Due Date : 01-09-2021

### Calibration Gas Details:

NO Gas : 746.0 ppm NO, Balance N<sub>2</sub>  
SO<sub>2</sub> Gas : 740.0 ppm SO<sub>2</sub>, Balance N<sub>2</sub>  
CO Gas : 373 ppm CO, Balance N<sub>2</sub>  
N<sub>2</sub> Gas : 99.999% purity

### Calibration Equipment Details:

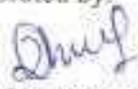
Details	N <sub>2</sub> Gas Cylinder	SO <sub>2</sub> Gas Cylinder	NO Gas Cylinder	CO Gas Cylinder
Sl. No.	18893	15559	18913	18913
Expiry Date	23-02-2022	23-02-2022	23-02-2022	23-02-2022

### Calibration Details:

Parameter	Zero Calibration			Span Calibration		
	Standard Gas Concentration	Measured Value	% of Deviation	Standard Gas Concentration	Measured Value	% of Deviation
SO <sub>2</sub>	0.0 ppm	0.0 ppm	0	740.0 ppm	752.0 ppm	1.62
NO <sub>x</sub>	0.0 ppm	0.0 ppm	0	746.0 ppm	758.0 ppm	1.6
CO	0.0 ppm	0.0 ppm	0	373.0 ppm	374.0 ppm	0.26

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated By:  <b>K. Dhaniram</b> Service Engineer		Reviewed by:  <b>Ram kishan Pal</b> Sr. Service Engineer
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### NK SQUARE SOLUTIONS

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## CALIBRATION CERTIFICATE

Certificate No: NKSS/CEMS/HIL/2021/173/C  
Customer : M/s. Hindalco Industries ltd Baragawan M.P.

Date of Issue: 12-07-2021

### Instrument Details:

Instrument : Online Stack SPM Analyzer  
Make : Forbes Marshall  
Model : DCEM 2100  
Serial No. : 723

Station Name : Stack- 5  
Date of Calibration : 04-07-2021  
Due Date : 03-10-2021

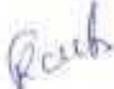
### Calibration Details:(Test Data)

Calibration Date	Zero % Opacity	100% Opacity	Remarks
04-07-2021	00.02%	92.5%	Dust monitor model no DCEM 2100 is calibrated successfully

Result: The Calibration of above instrument is performed and it meets the acceptance criteria.

### Operational Checks:-

Normalizing inputs	Temperature	Ok	Serial Comms.	Ok	Plant Status	Ok
	Span Check 100%	Ok	Data Valid	Ok	Contact	Ok
	Alarm Level 1/2	Ok	Alarm Led	Ok		

 Calibrated By: <b>Dhaniram Kachhi</b> Service Engineer		 Reviewed By: <b>Ram Kishan Pal</b> Sr. Service Engineer
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### NK SQUARE SOLUTIONS

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## CALIBRATION CERTIFICATE



Certificate No: NKSS/CEMS/HIL/2021/201/H

Date of Issue : 05-06-2021

Customer : M/s. Hindalco Industries Ltd., Bargawan, Singrauli M.P.

### Instrument Details:

Instrument	: Online Stack Gas Analyzer (SO <sub>2</sub> , NO <sub>x</sub> , CO)	Station Name	: CEMS-5
Make	: SIEMENS	Date of Calibration	: 02-06-2021
Model	: ULTRAMAT-23	Due Date	: 01-09-2021
Serial No.	: B5-008		

### Calibration Gas Details:

NO Gas : 746.0 ppm NO, Balance N<sub>2</sub>  
SO<sub>2</sub> Gas : 740.0 ppm SO<sub>2</sub>, Balance N<sub>2</sub>  
CO Gas : 373.0 ppm CO, Balance N<sub>2</sub>  
N<sub>2</sub> Gas : 99.999% purity

### Calibration Equipment Details:

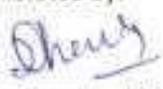
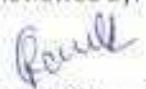
Details	N <sub>2</sub> Gas Cylinder	SO <sub>2</sub> Gas Cylinder	NO Gas Cylinder	CO Gas Cylinder
Sl. No.	15616	15555	18927	18927
Expiry Date	23-02-2022	23-02-2022	23-02-2022	23-02-2022

### Calibration Details:

Parameter	Zero Calibration			Span Calibration		
	Standard Gas Concentration	Measured Value	% of Deviation	Standard Gas Concentration	Measured Value	% of Deviation
SO <sub>2</sub>	0.0 ppm	0.0 ppm	0	740.0 ppm	739.0 ppm	-0.13
NO <sub>x</sub>	0.0 ppm	0.0 ppm	0	746.0 ppm	739.0 ppm	-0.93
CO	0.0 ppm	0.0 ppm	0	373.0 ppm	369.0 ppm	-1.07

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated By:  Dhaniram Kachhi Service Engineer		Reviewed by:  Ram Kishan Pal Sr. Service Engineer
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### NK SQUARE SOLUTIONS

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## CALIBRATION CERTIFICATE

Certificate No: NKSS/CEMS/HIL/2021/173/C  
Customer : M/s. Hindalco Industries ltd Baragawan M.P.

Date of Issue: 12-07-2021

### Instrument Details:

Instrument : Online Stack SPM Analyzer  
Make : Forbes Marshall  
Model : DCEM 2100  
Serial No. : 732

Station Name : Stack- 6  
Date of Calibration : 02-07-2021  
Due Date : 01-10-2021

### Calibration Details:(Test Data)

Calibration Date	Zero % Opacity	100% Opacity	Remarks
02-07-2021	00.01%	91.3%	Dust monitor model no DCEM 2100 is calibrated successfully

**Result:** The Calibration of above instrument is performed and it meets the acceptance criteria.

### Operational Checks:-

<b>Normalizing inputs</b>	Temperature	<b>Ok</b>	Serial Comms,	<b>Ok</b>	Plant Status	<b>Ok</b>
	Span Check: 100%	<b>Ok</b>	Data Valid	<b>Ok</b>	Contact	<b>Ok</b>
	Alarm Level 1/2	<b>Ok</b>	Alarm Led	<b>Ok</b>		

 Calibrated By: <b>Dhaniram Kachhi</b> Service Engineer		 Reviewed By: <b>Ram Kishan Pal</b> Sr. Service Engineer
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### NK SQUARE SOLUTIONS

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# CALIBRATION CERTIFICATE



Certificate No: NKSS/CEMS/HIL/2021/196/H

Date of Issue : 05-06-2021

Customer : M/s. Hindalco Industries Ltd.,Bargawan, Singrauli M.P.

### Instrument Details:

Instrument : Online Stack Gas Analyzer (SO<sub>2</sub>,NOX, CO)  
Make : SIEMENS  
Model : ULTRAMAT-23  
Serial No. : B5-005

Station Name : CEMS-6  
Date of Calibration : 02-06-2021  
Due Date : 01-09-2021

### Calibration Gas Details:

NO Gas : 746.0 ppm NO, Balance N<sub>2</sub>  
SO<sub>2</sub> Gas : 740.0 ppm SO<sub>2</sub>, Balance N<sub>2</sub>  
CO Gas : 373.0 ppm CO, Balance N<sub>2</sub>  
N<sub>2</sub> Gas : 99.999% purity

### Calibration Equipment Details:

Details	N <sub>2</sub> Gas Cylinder	SO <sub>2</sub> Gas Cylinder	NO Gas Cylinder	CO Gas Cylinder
Sl. No.	15558	15532	18921	18921
Expiry Date	23-02-2022	23-02-2022	23-02-2022	23-02-2022

### Calibration Details:

Parameter	Zero Calibration			Span Calibration		
	Standard Gas Concentration	Measured Value	% of Deviation	Standard Gas Concentration	Measured Value	% of Deviation
SO <sub>2</sub>	0.0 ppm	0.0 ppm	0	740.0 ppm	748.0 ppm	1.08
NO <sub>x</sub>	0.0 ppm	0.0 ppm	0	746.0 ppm	742.0 ppm	-0.53
CO	0.0 ppm	0.0 ppm	0	373.0 ppm	372.0 ppm	-0.26

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance criteria.

Calibrated By:

Dhaniram kachhi  
Service Engineer



Reviewed by:

Ramkishan Pal  
Sr. Service Engineer

## NK SQUARE SOLUTIONS

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## CALIBRATION CERTIFICATE

Certificate No: NKSS/AAQMS/HIL/2021/189/H

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P

### Instrument Details:

Instrument : PM-10 Analyzer

Station Name : Town ship

Make : Metone Instruments, U.S.A

Date of Calibration : 11-03-2021

Model : BAM-1020

Due Date : 10-09-2021

Serial No : U11749

### Calibration Details:

Parameter	Span Calibration		
	Standard Value	Measured Value	% of Deviation
Film Value	808 $\mu\text{g}/\text{m}^3$	813 $\mu\text{g}/\text{m}^3$	0.61

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

**Calibrated by:**

  
Dhaniram Kachhi  
Service Engineer



**Reviewed by:**

  
Abdul Razak  
Sr. Service Engineer

## NK SQUARE SOLUTIONS

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## CALIBRATION CERTIFICATE

Certificate No: **NKSS/AAQMS/HIL/2021/188/H**

Date of Issue: 17-03-2021

Customer: M/s Hindalco Industries Ltd., Bargawan, Singrauli, M.P

### Instrument Details:

Instrument: PM -2.5 Analyzer

Station Name : Town Ship

Make : Metone Instruments, U.S.A

Date of Calibration :11-03-2021

Model : BAM-1020

Due Date :10-09-2021

Serial No : R13473

### Calibration Details:

Parameter	Span Calibration		
	Standard Value	Measured Value	% of Deviation
Film Value	789 $\mu\text{g}/\text{m}^3$	798 $\mu\text{g}/\text{m}^3$	1.12

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance

Criteria.

Calibrated by:

  
K. Dhani Ram  
Service Engineer



Reviewed by:

  
Abdul razak  
Sr. Service Engineer

### **NK SQUARE SOLUTIONS**

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# CALIBRATION CERTIFICATE



Certificate No: NKSS/AAQMS/HIL/2021/191/H

Date of Issue: 17-03-2021

Customer: M/s, Hindalco Industries Ltd., Bargawan, Singrauli, M.P.

### Instrument Details:

Instrument : SO2 Analyser

Make : Horiba, Japan

Model : APSA-370

Serial No: B4JCHRAL

Station Name : Township

Date of Calibration : 11-03-2021

Due Date : 10-09-2021

### Calibration Gas Details

Calibration Diluter: CG5-12

SO2 Gas: 99.3 ppm SO2, Balance N2

Serial No : 749516

### Calibration Equipment Details:

Ratio: 1: 200

Details	SO2 Gas Cylinder
Serial Number	9940
Expiry Date	03.11.2021

### Calibration Details:

Parameter	Zero Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
SO2	0.0ppm	0.0ppm	0.450 ppm	0.457ppm	1.53

Acceptable Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

### Calibrated by:

  
Dhanraj Kachhi  
Service Engineer



### Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

## NK SQUARE SOLUTIONS

Regd. Office : 83/3, Saraswati Nagar Colony, Lothukunta, Secunderabad, Telangana State - 500 015

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# CALIBRATION CERTIFICATE



Certificate No: NKSS/AAQMS/HIL/2021/187/H

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P

**Instrument Details:**

Instrument : NOx Analyzer

Make : Horiba, Japan

Mode : APNA-370

Serial No : TLXMKVT4

Station Name : Township

Date of Calibration : 11-03-2021

Due Date : 10-09-2021

**Calibration Gas Details:**

Calibration Diluter: CG5-12

NO Gas: 99.3 ppm NO, Balance N<sub>2</sub>

Serial No: 749516

**Calibration Equipment Details:**

Ratio: 1: 200

Details	NO Gas Cylinder
Serial Number	10130
Expiry Date	03-11-2021

**Calibration Details:**

Parameter	Zero Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
NO	0.0ppm	0.0 ppm	0.470	0.465	-1.07

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

**Calibrated by:**

**Dhanifam Kachhi**  
Service Engineer



**Reviewed by:**

**Abdul Razak**  
Sr. Service Engineer

## NK SQUARE SOLUTIONS

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# CALIBRATION CERTIFICATE



Certificate No: NKSS/AAQMS/HIL/2021/186/H

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P

### Instrument Details:

Instrument : CO Analyzer  
Make : Horiba, Japan  
Model : APMA-370  
Serial No : 3PJPNDQ

Station Name : Township  
Date of Calibration : 11-03-2021  
Due Date: 10-09-2021

### Calibration Gas Details:

Calibration Diluter: CGS-12  
CO Gas: 100 ppm CO, Balance N2  
Serial No: 749516

### Calibration Equipment Details:

Ratio: 1: 200

Details	CO Gas Cylinder
Serial Number	9952
Expiry Date	03-11-2021

### Calibration Details:

Parameter	Zero Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
CO	0.0ppm	0.0 ppm	0.850 ppm	0.852ppm	0.23

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

Calibrated by:

  
Dhaniram Kachhi  
Service Engineer



Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

## NK SQUARE SOLUTIONS

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## CALIBRATION CERTIFICATE

Certificate No: NKSS/AAQMS/HIL/2021/177/H

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P

### Instrument Details:

Instrument : PM –10 Analyzer

Station Name : ETP SITE

Make : Metone Instruments, U.S.A

Date of Calibration : 11-03-2021

Model : BAM-1020

Due Date : 10-09-2021

Serial No : R13472

### Calibration Details:

Parameter	Span Calibration		
	Standard Value	Measured Value	% of Deviation
Film Value	850 $\mu\text{g}/\text{m}^3$	859 $\mu\text{g}/\text{m}^3$	1.04

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

Calibrated by:

  
Dharam Kachhi  
Service Engineer



Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

### NK SQUARE SOLUTIONS

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## CALIBRATION CERTIFICATE

Certificate No: NKSS/AAQMS/HIL/2021/178/H

Date of issue: 17-03-2021

Customer: M/s Hindalco Industries Ltd., Bargawan, Singrauli, M.P

### Instrument Details:

Instrument : PM -2.5 Analyzer

Station Name : ETP SITE

Make : Metone Instruments, U.S.A

Date of Calibration : 11-03-2021

Model : BAM-1020

Due Date : 10-09-2021

Serial No : R13471

### Calibration Details:

Parameter	Span-Calibration		
	Standard Value	Measured Value	% of Deviation
Film Value	806 $\mu\text{g}/\text{m}^3$	808 $\mu\text{g}/\text{m}^3$	0.24

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

**Calibrated by:**

  
Dharamram Kachhi  
Service Engineer



**Reviewed by:**

  
Abdul Razak  
Sr. Service Engineer

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## CALIBRATION CERTIFICATE



Certificate No: NKSS/AAQMS/HIL/2021/176/H

Date of Issue: 17-03-2021

Customer: M/s, Hindalco Industries Ltd., Bargawan, Singrauli, M.P.

**Instrument Details:**

Instrument : SO<sub>2</sub> Analyser  
 Make : Horiba, Japan.  
 Model : APSA-370.  
 Serial No : P60BBGRL

Station Name : ETP-SITE  
 Date of Calibration: 11-03-2021  
 Due Date: 10-09-2021

**Calibration Gas Details**

Calibration Diluter: CGS-12  
 SO<sub>2</sub> Gas: 99.3 ppm SO<sub>2</sub>, Balance N<sub>2</sub>.  
 Serial No : 749516

**Calibration Equipment Details:**

Ratio: 1: 200

Details	SO <sub>2</sub> Gas Cylinder
Serial Number	9940
Expiry Date	03.11.2021

**Calibration Details:**

Parameter	Zero Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
SO <sub>2</sub>	0.0ppm	0.0ppm	0.480 ppm	0.476 ppm	-0.84

Acceptable Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

<p><b>Calibrated by:</b></p>  <p>Dhanam Kachhi Service Engineer</p>		<p><b>Reviewed by:</b></p>  <p>Abdul Razak Sr. Service Engineer</p>
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# CALIBRATION CERTIFICATE

Certificate No: NKSS/AAQMS/HIL/2021/179/H  
Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P.

Date of Issue: 17-03-2021

### Instrument Details:

Instrument : NOx Analyzer  
Make : Horiba, Japan.  
Model : APNA-370  
Serial No : SNE8MDK5

Station Name : ETP- SITE  
Date of Calibration : 11-03-2021  
Due Date : 10-09-2021

### Calibration Gas Details:

Calibration Diluter : CGS-12  
NO Gas : 99.3 ppm NO, Balance N2.  
Serial No : 749516

### Calibration Equipment Details:

Ratio: 1 : 200

Details	NO Gas Cylinder
Serial Number	10130
Expiry Date	03-11-2021

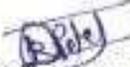
### Calibration Details:

Parameter	Zero Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
NO	0.0ppm	0.0 ppm	0.480	0.482	0.41

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

Calibrated by:

  
Dhaniram Kachhi  
Service Engineer



Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

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# CALIBRATION CERTIFICATE



Certificate No: NKSS/AAQMS/HIL/2021/190/H

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P.

### Instrument Details:

Instrument : CO Analyzer

Station Name : Smelter ETP

Make : Horiba, Japan.

Date of Calibration :11-03-2021

Model : APMA-370

Due Date :10-09-2021

Serial No : 3PJPNNDQ

### Calibration Gas Details: Calibration Diluter: CGS-12

CO Gas: 100ppm CO, Balance N2.

Serial No:749516

### Calibration Equipment Details: Ratio: 1: 200

Details	CO Gas Cylinder
Serial Number	9952
Expiry Date	03-11-2021

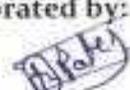
### Calibration Details:

Parameter	Zero Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
CO	0.0ppm	0.0 ppm	0.850 ppm <sup>†</sup>	0.852 ppm	0.23

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance.

Criteria:

Calibrated by:  K. Dhaniram Ram Service Engineer		Reviewed by:  Abdul Razak Sr. Service Engineer
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## NK SQUARE SOLUTIONS

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CALIBRATION CERTIFICATE

Certificate No: NKSS/AAQMS/HIL/2021/173/H

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P

Instrument Details:

Instrument : PM-10 Analyzer

Station Name : Cooling Tower

Make : Metone Instruments, U.S.A

Date of Calibration : 13-03-2021

Model : BAM-1020

Due Date : 12-09-2021

Serial No : U11749

Calibration Details:

Parameter	Span Calibration		
	Standard Value	Measured Value	% of Deviation
Film Value	810 µg/m <sup>3</sup>	813 µg/m <sup>3</sup>	0.37

Accepted Tolerance: ± 2 %

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria:

**Calibrated by:**

  
Dhaniram Kachhi  
Service Engineer



**Reviewed by:**

  
Abdul Razak  
Sr. Service Engineer

**NK SQUARE SOLUTIONS**

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## CALIBRATION CERTIFICATE

Certificate No: NKSS/AAQMS/HIL/2021/172/H

Date of Issue: 17-03-2021

Customer: M/s Hindalco Industries Ltd., Bargawan, Singrauli, M.P.

### Instrument Details:

Instrument : PM-2.5 Analyzer

Station Name : Cooling Tower

Make : Metone Instruments, U.S.A

Date of Calibration : 13-03-2021

Model : BAM-1020

Due Date : 12-09-2021

Serial No : U11748

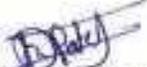
### Calibration Details:

Parameter	Span Calibration		
	Standard Value	Measured Value	% of Deviation
Film Value	822 $\mu\text{g}/\text{m}^3$	832 $\mu\text{g}/\text{m}^3$	1.21

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

Calibrated by:

  
Dhaniram Kachhi  
Service Engineer



Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

## **NK SQUARE SOLUTIONS**

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# CALIBRATION CERTIFICATE



Certificate No: **NKSS/AAQMS/HIL/2021/171/H**

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P.

### Instrument Details:

Instrument : SO<sub>2</sub> Analyser  
Make : Horiba, Japan.  
Model : APSA-370  
Serial No : SN5L0J96

Station Name : Cooling Tower  
Date of Calibration: 13-03-2021  
Due Date: 12-09-2021

### Calibration Gas Details

Calibration Diluter : CGS-12  
SO<sub>2</sub> Gas : 99.3 ppm SO<sub>2</sub>, Balance N<sub>2</sub>  
Serial No : 749516

### Calibration Equipment Details:

Ratio: 1: 200

Details	SO <sub>2</sub> Gas Cylinder
Serial Number	9940
Expiry Date	03.11.2021

### Calibration Details:

Parameter	Zero Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
SO <sub>2</sub>	0.0ppm	0.0ppm	0.480 ppm	0.476 ppm	-0.83

Acceptable Tolerance: + 2 %

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

### Calibrated by:

  
Dhantram Kachhi  
Service Engineer



### Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

## NK SQUARE SOLUTIONS

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## CALIBRATION CERTIFICATE



Certificate No: NKSS/AAQMS/HIL/2021/174/H

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P.

### Instrument Details:

Instrument : NOx Analyzer

Make : Horiba, Japan.

Model : APNA-370

Serial No : UW0013TF

Station Name : Cooling Tower

Date of Calibration : 13-03-2021

Due Date : 12-09-2021

### Calibration Gas Details:

Calibration Diluter: CGS-12

NO Gas: 99.3 ppm NO, Balance N<sub>2</sub>.

Serial No: 749516

### Calibration Equipment Details:

Ratio: 1-200

Details	NO Gas Cylinder
Serial Number	10130
Expiry Date	03-11-2021

### Calibration Details:

Parameter	Zero Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
NO	0.0ppm	0.0 ppm	0.480	0.483	0.62

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

**Calibrated by:**

**Dhanram Kachhi**  
Service Engineer



**Reviewed by:**

**Abdul Razak**  
Sr. Service Engineer

## **NK SQUARE SOLUTIONS**

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## CALIBRATION CERTIFICATE

Certificate No: NKSS/AAQMS/HIL/2021/175/H

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P

### Instrument Details:

Instrument : CO Analyzer  
Make : Horiba, Japan  
Model : APMA-370  
Serial No : 53L9X6KF

Station Name : Cooling Tower  
Date of Calibration : 13-03-2021  
Due Date: 12-09-2021

### Calibration Gas Details:

Calibration Diluter: CGS-12  
CO Gas: 100 ppm CO, Balance N<sub>2</sub>  
Serial No: 749516

### Calibration Equipment Details:

Ratio: 1:200

Details	CO Gas Cylinder
Serial Number	9952
Expiry Date	03-11-2021

### Calibration Details:

Parameter	Zero Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
CO	0.0ppm	0.0 ppm	0.750 ppm	0.746ppm	-0.53

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

Calibrated by:

  
Dhaniram Kachhi  
Service Engineer



Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

## NK SQUARE SOLUTIONS

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CALIBRATION CERTIFICATE

Certificate No: NKSS/AAQMS/HIL/2021/183/H

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P

Instrument Details:

Instrument : PM-10 Analyzer

Make : Metone Instruments, U.S.A

Model : BAM-1020

Serial No : U11746

Station Name : Reservoir

Date of Calibration : 12-03-2021

Due Date: 11-09-2021

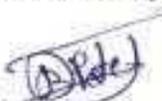
Calibration Details:

Parameter	Span Calibration		
	Standard Value	Measured Value	% of Deviation
Film Value	808 µg/m <sup>3</sup>	814 µg/m <sup>3</sup>	0.73

Accepted Tolerance: ± 2%

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

Calibrated by:

  
Dhaniram Kachhi  
Service Engineer



Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

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## CALIBRATION CERTIFICATE

Certificate No: NKSS/AAQMS/HIL/2021/184/H

Date of Issue: 17-03-2021

Customer: M/s Hindalco Industries Ltd., Bargawan, Singrauli, M.P

### Instrument Details:

Instrument : PM -2.5 Analyzer

Make : Metone Instruments, U.S.A

Model : BAM-1020

Serial No : U11747

Station Name : Reservoir

Date of Calibration : 12-03-2021

Due Date : 11-09-2021

### Calibration Details:

Parameter	Span Calibration		
	Standard Value:	Measured Value	% of Deviation
Film Value	789 $\mu\text{g}/\text{m}^3$	792 $\mu\text{g}/\text{m}^3$	0.37

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

### Calibrated by:

  
Dhaniram Kachhi  
Service Engineer



### Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

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## CALIBRATION CERTIFICATE



Certificate No: NKSS/AAQMS/HIL/2021/185/H

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P.

### Instrument Details:

Instrument : SO2 Analyser  
Make : Horiba, Japan.  
Model : APSA-370  
Serial No : B4JCHRAL

Station Name : Reservoir  
Date of Calibration : 12-03-2021  
Due Date : 11-09-2021

### Calibration Gas Details

Calibration Diluter: CGS-12  
SO2 Gas: 99.3 ppm SO2, Balance N2.  
Serial No : 749516

### Calibration Equipment Details:

Ratio: 1: 200

Details	SO2 Gas Cylinder
Serial Number	9940
Expiry Date	03.11.2021

### Calibration Details:

Parameter	Zero Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
SO2	0.0ppm	0.0ppm	0.450 ppm	0.457ppm	1.53

Acceptable Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

Calibrated by:

  
Dhaniram Kachhi  
Service Engineer



Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

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## CALIBRATION CERTIFICATE



Certificate No: NKSS/AAQMS/HIL/2021/182/H

Date of Issue : 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P

### Instrument Details:

Instrument : NOx Analyzer  
Make : Horiba, Japan.  
Model : APNA-370  
Serial No : 1HMMG70X

Station Name : Reservoir  
Date of Calibration : 12-03-2021  
Due Date : 11-09-2021

### Calibration Gas Details:

Calibration Diluter : CGS-12  
NO Gas : 99.3 ppm NO, Balance N2.  
Serial No : 749516

### Calibration Equipment Details:

Ratio: 1: 200

Details	NO Gas Cylinder
Serial Number	10130
Expiry Date	03-11-2021

### Calibration Details:

Parameter	Zero Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
NO	0.0ppm	0.0 ppm	0.450	0.456	1.31

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

Calibrated by:

  
Dhaniram Kachhi  
Service Engineer



Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

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# CALIBRATION CERTIFICATE



Certificate No: **NKSS/AAQMS/HIL/2021/181/H**

Date of Issue: 17-03-2021

Customer: M/s. Hindalco Industries Ltd., Bargawan, Singrauli, M.P

### Instrument Details:

Instrument : CO Analyzer  
Make : Horiba, Japan.  
Model : APMA-370  
Serial No. : VASVMMT2

Station Name : Reservoir  
Date of Calibration : 12-03-2021  
Due Date : 11-09-2021

### Calibration Gas Details:

Calibration Diluter : CGS-12  
CO Gas : 100 ppm CO, Balance N2.  
Serial No : 749516  
Ratio : 1: 200

### Calibration Equipment Details:

Details	CO Gas Cylinder
Serial Number	9952
Expiry Date	03-11-2021

### Calibration Details:

Parameter	Zero-Calibration		Span Calibration		% of Deviation
	Standard Gas Concentration	Measured Value	Standard Gas Concentration	Measured Value	
CO	0.0ppm	0.0 ppm	0.850 ppm	0.855 ppm	0.51

Accepted Tolerance:  $\pm 2\%$

Result: The Calibration of above instrument is performed and it meets the acceptance Criteria.

Calibrated by:

  
Dhanniram Kachhi  
Service Engineer



Reviewed by:

  
Abdul Razak  
Sr. Service Engineer

## NK SQUARE SOLUTIONS

Regd. Office : 83/3, Saraswati Nagar Colony, Lothukunta, Secunderabad, Telangana State - 500 015.

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Recommendations of the Oversight Committee in its first quarterly report  
for Compliance by the Jaypee Nigrie Super Thermal Power Plant

**ENCLOSURE 1D / IV**

S. No.	Recommendations of the Oversight Committee	Current Status of action as on 31-07-2021
A.	The thermal power plants shall ensure that 100% fly ash utilization of the fly ash shall be ensured by them as per the Fly ash Notification.	<p>Ash Utilization in 2020 - 21 was 100.04 %.</p> <p>Having long term MoU with End User (Cement Industry).</p> <p>Efforts have been made to utilize/dispatch 100% currently generated fly ash.</p>
B.	For the achievement of new emission norms, equipments like FGD, SCR/ SNCR etc shall be got installed as per the time lines provided to them by the CPCB.	<p>Action has already been taken to install Wet Lime Stone based FGD on both of the Units, so as to control SO<sub>2</sub> Emission in order to meet New Emission Norms of MoEF&amp;CC Notification dated 07.12.2015 (keeping in view of the timeline as defined in the MoEF &amp; CC gazette notification dated 31-03-2021).</p> <p>FGD Status - NIT issued on dated 31.12.2019 but due to massive outbreak of second wave of pandemic Covid-19 &amp; receipt of request from various bidders for extension of last date of bid submission, the last date of bid submission now has been extended up to 30<sup>th</sup> Sept. 2021.</p>
C.	Fly ash dyke shall be monitored regularly for their strength through some reputed organizations. The design should be safe and timely maintenance should be regularly ensured.	<p>Structural Stability Study has been carried out by Competent Third Party Technical Agency on 21.11.2019.</p> <p>SOPs has been prepared and regular checking is being done, recent report with SOPs is attached as <b>Annexure - I</b>.</p> <p>Design of Ash Pond has been done by M/s Development Consultants Pvt. Ltd. (DCPL) a renowned designing agency. M/s DCPL drawing has been submitted to MPPCB vide letter no. JPVL/COORD/POLL/2013-14 dated January 21, 2014. The drawing No. is K6A24-DWG-C-595 Rev.4.</p> <p>Ash pond has been constructed as per above approved drawing.</p> <p>The Ash Dyke has been constructed with upstream &amp; downstream slopes (1V:2H). Ash Dyke has been constructed with HDPE lining on inner side and over that PCC (75mm) layer has been provided to protect it and eliminates any possibility of breach of embankment.</p> <p>Ash Pond is built over an area of 21.2 ha and is consisting of two ponds &amp; equipped with 100% Ash Water Recirculation System to prevent any ash mixed water discharge to outside.</p> <p>The Ash Dyke is situated within intact boundary wall of Power Plant.</p>



D.	Air borne fly ash from the ash dykes, specifically during summers should be controlled through arrangements of water sprinkling, vegetation and other scientific measure.	The bottom ash which is in slurry form is sent through ash disposal pipes to the bottom ash slurry pond i.e. the Ash Dyke. Ash Pond Top layer is always covered with water. Also, mobile water sprinkling arrangement is in place for using as and when required for controlling air borne fly ash. Photographs of Ash Ponds dated 3 <sup>rd</sup> August, 2021 are being attached as <b>Annexure-II</b> .
E.	NTPC- VSTPS shall ensure to start disposal of the fly ash in the abandoned Gorbi mines, and shall complete the related studies at the earliest.	Not Applicable to us.
F.	Health check up of villagers through mobile medical van be conducted regularly for the detection of the occupational diseases like silicosis, fluorosis etc. and treatment be provided under CSR activities. Record should be maintained and made available to the district health authorities.	Free Medical Check-up facility & Free Medicines are being Provided to nearby Villagers as required.  Providing Mobile Hospital & Ambulance Service to the nearby affected villages (Nigrie, Niwas, katai & Hardi & Mahua Ganv and Chamrach and Joba).
G.	The thermal power plants namely, M/s Essar Power MP Ltd. and M/s Sasan Power Ltd. shall deposit with MPPCB the remaining amount of environmental compensation of Rs. 9 Cr., and Rs. 8 Cr. respectively out of the levied amount of Rs. 10 Cr. M/s NTPC- Vindhyachal, has however obtained a stay from Hon'ble Supreme Court.	Not Applicable to us.
H.	NPTC- Vindhyachal shall complete the dredging of the Rihand reservoir for the removal of the ash flown into it due to breach of its ash dyke and to complete it within 3 months time.	Not Applicable to us.
I.	NPTC- Vindhyachal should complete the studies of making RCC wall around the ash dyke through IIT Roorkee / IIT Delhi and submit the report for further consideration on its technical viability. Similarly studies / action should be initiated for the construction of Ash mounds.	Not Applicable to us.
J.	All the TPPs / industries shall calibrate all the CAAQMS and CEMS installed by them in 3 months (if not done recently) and submit the report to the committee. Such reports will be useful in checking the error percentage in the results.	CAAQMS & CEMS installed in the plant have been given on the annual maintenance contract and are being calibrated on quarterly basis by Equipment Manufacturers itself.  The last Calibration of CAAQMS was done from 13 <sup>th</sup> July, 2021 to 16 <sup>th</sup> July, 2021 & Calibration of CEMS was done on 11 <sup>th</sup> July, 2021. Copy of the calibration report is being attached as <b>Annexure - III</b> .



Sr. President  
Jaypee Nigrie Super Thermal Power Plant Nigrie  
(A Unit of Jaypee Infratech Power Ventures Ltd.)  
Singrauli 486069 (M.P.)

JAYPEE NIGRIE SUPER THERMAL POWER PLANT

Annexure 1



ISSUE NUMBER: 1.0

ISSUE DATE: 20.05.2019

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REVISION DATE:

DOC NUMBER: 30-IMS-AHP-35-R

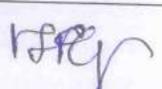
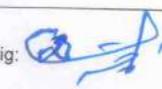
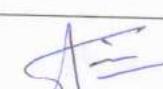
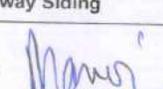
DOC: Check Sheet of Ash Pond Inspection

1. Name of the Project: Jaypee Nigrie Super Thermal Power Project (A Division of Jaiprakash Power Ventures Limited)

2. Inspection Date: 26.07.2021

3. Name of the inspection officers: S/Shri V S Pandey, J K Mishra , M K Tripathi and S P Singh.

A) ASH POND DETAILS	Ash Pond 1	Ash Pond 2	Inspection Schedule	Remarks
a) Whether any ash surface is exposed above water.	No	No	Fortnightly	
b) If ash surface is exposed above water level whether ash is flying anywhere.	No	No	Fortnightly	
c) Whether water flow is obstructed by floating plants or any other floating bodies near over flow channel.	No	No	Fortnightly	
<b>B) Dyke</b>				
<b>a) Top level of dyke.</b>				
1. Whether there are any signs of settlement on the top of dyke.	No	No	Fortnightly	
<b>b) Whether any sign of settlement / caving -in :</b>				
1. Upstream slope.	No	No	Fortnightly	
2. Downstream slope.	No	No	Fortnightly	
<b>c) Whether any seepage is observed on:</b>				
1. Downstream slope.	No	No	Fortnightly	
<b>d) Whether any wet spots / areas are present on:</b>				
1. Downstream slope.	No	No	Fortnightly	
<b>e) Whether any longitudinal cracks are observed on:</b>				
1. The top of dyke.	No	No	Fortnightly	
2. The downstream slope.	No	No	Fortnightly	
<b>f) Whether any transverse cracks are observed on:</b>				
1. The top of dyke.	No	No	Fortnightly	
2. The downstream slope.	No	No	Fortnightly	
<b>g) If any cracks are observed on the top and the slopes:</b>				
1. Whether the cracks on the top & slopes are continuous.	No	No	Fortnightly	
2. Whether the cracks are lengthening with time.	No	No	Fortnightly	
3. Whether the cracks are widening with time.	No	No	Fortnightly	
4. If seepage is observed in the slope or near the d/s toe.	No	No	Fortnightly	
<b>h) Whether the seepage water is muddy:</b>				
1. If the seeping water is muddy	No	No	Fortnightly	
2. If the seepage water is muddy, the seepage area has been covered with inverted filters.	No	No	Fortnightly	
3. If filters have been placed over the seepage areas. Whether the water has become clear indicating reduction in material carry over.	No	No	Fortnightly	
4. Whether the seepage rate is changing with time.	No	No	Fortnightly	
5. Whether the filter material is getting displaced due to seepage water flow.	No	No	Fortnightly	

i) Whether any damage is there in the turfing protection on the downstream slope.	No	No	Fortnightly	
j) whether the stone pitching / concrete lining on the slopes are dislodged or caved in at any location on:				
1. The upstream slope (concrete lining)	No	No	Fortnightly	
2. The downstream slope (stone pitching)	No	No	Fortnightly	
k) Whether there is any growth of vegetation / bushes on the:				
1. Downstream slope.	Yes	Yes	Fortnightly	Regular cutting is being done
2. Upstream slope.	Yes	Yes	Fortnightly	Regular cutting is being done
3. Top of dyke.	Yes	Yes	Fortnightly	Regular cutting is being done
l) Whether any rat holes are present on the dyke:				
1. On the downstream slope.	No	No	Fortnightly	
2. On the dyke top.	No	No	Fortnightly	
m) If rat holes are present, whether they are being plugged with earth.	No	No	Fortnightly	
n) If rat holes present, whether there are also signs of cracking, sinking or settlement on the top or downstream slope of the dyke near region where rat holes are found.	No	No	Fortnightly	
o) Whether there are any rain cuts on dyke:				
1. Top of dyke.	No	No	Fortnightly	
2. Downstream slope.	No	No	Fortnightly	
p) Whether the rock toe is maintaining its design shape.	Yes	Yes	Fortnightly	
q) Whether the toe drain is clean with no obstruction for flow of water:	Yes	Yes	Fortnightly	
r) Whether any growth of vegetation inside the toe drain.	Regular cleaning	Regular cleaning	Fortnightly	
s) Whether the lining in the toe drain is in good condition.	Yes	Yes	Fortnightly	
t) Whether there is any flow in the toe drain.	Yes	Yes	Fortnightly	
Discharge of Ash Slurry in:				
Pond 1:	No (Ash filledup)			
Pond 2:	Started since 10.05.2021			
SIGNATURE OF INSPECTION OFFICERS				
Ash Handling Plant	Civil		Railway Siding	
Sig: 	Sig: 		Sig: 	
Name: V. S. Pandey	Name: J. K. MISHRA	S. P. Singh	Name: M. K. Tripathi	
Date: 26/07/2021	Date: 26.07.2021	26/07/2021	Date: 26/07/2021	

Photographs of ASH POND –I



**Photographs of ASH POND –II**



**Ambient Air Quality Monitoring Station (AAQMS)****CALIBRATION REPORT**

Customer Name : J P NIGRIE  
 Station Name : AAQMS #1  
 Station Location : GRINDING UNIT  
 Analyser Make : Thermofisher Scientific

Date:	14.07.2021
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Gas Analyser	Zero Calibration				SPAN VALUE	Span Calibration				Remark
	Zero Reading		Background			Span Reading		Co-efficient		
	Old	New	Old	New		Old	New	Old	New	
SO <sub>2</sub> (PPB)	2.4	0.00	22.00	25.10	200 PPB	191.00	200.00	1.009	1.067	OK
NO (PPB)	-2.1	0.00	63.7	61.1	151 PPB	148.00	151.00	1.894	1.899	OK
NO <sub>X</sub> (PPB)	-3.4	0.00	72.7	69.5	200 PPB	194.00	200.00	1.252	1.253	OK
CO (PPM)	0.216	0.00	-0.416	-0.2	2 PPM	1.93	2.00	0.546	0.549	OK

Foil calibration -		Zero value - 0.0	Span value - 1021 ug/m <sup>3</sup>	Remark
PM Analysers	Range	Amplification Factor		
		Old Value	New Value	
PM 10	1000	7354	7347	OK
PM 2.5	1000	7110	7101	OK



## Ambient Air Quality Monitoring Station (AAQMS)

### CALIBRATION REPORT

Customer Name : J P NIGRIE  
 Station Name : AAQMS #2  
 Station Location : STP  
 Analyser Make : Thermofisher Scientific

Date:	13.07.2021
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Gas Analyser	Zero Calibration				SPAN VALUE	Span Calibration				Remark
	Zero Reading		Background			Span Reading		Co-efficient		
	Old	New	Old	New		Old	New	Old	New	
SO2 (PPB)	2.3	0.00	32.1	30.5	200 PPB	211.00	200.00	1.50	1.41	OK
NO (PPB)	0.1	0.00	3.3	3.4	150PPB	151.00	151.00	1.18	1.18	OK
NOX (PPB)	3.6	0.00	3.7	8.9	200 PPB	191.00	200.00	1.25	1.25	OK
CO (PPM)	-0.86	0.00	0	-0.86	2 PPM	1.940	2.00	1.00	1.03	OK

Foil calibration -		Zero value - 0.0	Span value - 1021 ug/m3	Remark
PM Analysers	Range	Amplification Factor		
		Old Value	New Value	
PM 10	1000	7431	7441	OK
PM 2.5	1000	7144	7386	OK



## Ambient Air Quality Monitoring Station (AAQMS)

### CALIBRATION REPORT

Customer Name : J P NIGRIE  
 Station Name : AAQMS #3  
 Station Location : NDCT  
 Analyser Make : Thermofisher Scientific

Date:	16.07.2021
-------	------------

Gas Analyser	Zero Calibration				SPAN VALUE	Span Calibration				Remark
	Zero Reading		Background			Span Reading		Co-efficient		
	Old	New	Old	New		Old	New	Old	New	
SO <sub>2</sub> (PPB)	-1.8	0.00	56.3	55.1	200 PPB	193.00	200.00	0.85	0.85	OK
NO (PPB)	-2.1	0.00	31.4	29.2	151 PPB	146.00	151.00	1.32	1.39	OK
NO <sub>X</sub> (PPB)	-4.1	0.00	40.4	36.4	200 PPB	187.00	200.00	1.24	1.36	OK
CO (PPM)	-0.16	0.00	0	-0.16	2 PPM	1.88	2.00	1.00	1.24	OK

Foil calibration -		Zero value - 0.0	Span value - 1021 ug/m <sup>3</sup>	Remark
PM Analysers	Range	Amplification Factor		
		Old Value	New Value	
PM 10	1000	7285	7306	OK
PM 2.5	1000	7272	6828	OK



**Ambient Air Quality Monitoring Station (AAQMS)**

**CALIBRATION REPORT**

Customer Name : J P NIGRIE  
 Station Name : AAQMS #4  
 Station Location : FOUPH  
 Analyser Make : Thermofisher Scientific

Date: 15.07.2021

Gas Analyser	Zero Calibration				SPAN VALUE	Span Calibration				Remark
	Zero Reading		Background			Span Reading		Co-efficient		
	Old	New	Old	New		Old	New	Old	New	
SO2 (PPB)	1.8	0.00	18.2	18.5	200 PPB	228.00	200.00	0.78	0.65	OK
NO (PPB)	-2.1	0.00	13.6	11.9	153 PPB	154.00	153.00	1.71	1.69	OK
NOX (PPB)	-1	0.00	14.6	13.4	200 PPB	206.00	200.00	1.16	1.14	OK
CO (PPM)	-0.04	0.00	-0.08	-0.078	2 PPM	2.09	2.00	1.05	1.00	OK

Foil calibration -		Zero value - 0.0	Span value - 1021 ug/m3	Remark
PM Analysers	Range	Amplification Factor		
		Old Value	New Value	
PM 10	1000	7334	7425	OK
PM 2.5	1000	7541	7559	OK



**CALIBRATION REPORT FOR GAS ANALYZERS S710**

JAYPEE NIGRIE		Model: S710		SICK INDIA PVT LTD			
Calibration Date: 11.07.2021		Equipment Number : (S.N:715748)		Done by : Salim Gadkari			
<p>1. Model No: S710 Multor.</p> <p>2. Customer Name: Jaypee Nigrie Super Thermal Power Plant, Jaiprakash Power Ventures Ltd, Village-Nigrie, Post-Niwas, Tehsil-Sarai, Dist-Singrauli, Madhya Pradesh-486669.</p> <p>3. Instrument Tag No: Unit#1 CEMS analyser.</p> <p>4. Calibration Due Date: 10.01.2022</p>							
S.N.	Cylinder No	Expiry date of calibration cylinder	Component	Cylinder Value	Before Calibration Value	After Calibration Value	Remarks
1	SGC-43109H	23.12.2021	SO2	788 ppm	792Nppm	790 ppm	Calibrated
2	SGC-43109H	23.12.2021	NO	800 ppm	819 ppm	796 ppm	Calibrated
3	SGC-43109H	23.12.2021	CO2	34.53 %	34.81 %	34.53 %	Calibrated

The readings are within standard range according to the used test method. Analyzer system is operating normally.

Date / Place: 11.07.21/JPVL Nigrie.



*S.K. Choudhury*

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SICK representative signature

Salim Gadkari

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SICK representative Name

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Customer representative signature

Santosh Kumar Choudhury

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Customer representative Name

**CALIBRATION REPORT FOR GAS ANALYZERS S710**

<b>JAYPEE NIGRIE</b>		<b>Model: S710</b>		<b>SICK INDIA PVT LTD</b>			
<b>Calibration Date: 11.07.2021</b>		<b>Equipment Number : (S.N:715246)</b>		<b>Done by : Salim Gadkari</b>			
<p>1. Model No: S710 Multor.</p> <p>2. Customer Name: Jaypee Nigrie Super Thermal Power Plant, Jaiprakash Power Ventures Ltd, Village-Nigrie, Post-Niwas, Tehsil-Sarai, Dist-Singrauli, Madhya Pradesh-486669.</p> <p>3. Instrument Tag No: Unit#2 CEMS analyser.</p> <p>4. Calibration Due Date: 10.01.2022</p>							
S.N.	Cylinder No	Expiry date of calibration cylinder	Component	Cylinder Value	Before Calibration Value	After Calibration Value	Remarks
1	CSL-43109H	23.12.2021	SO2	788 ppm	780 ppm	789 ppm	Calibrated
2	CSL-43109H	23.12.2021	NO	800 ppm	789 ppm	798 ppm	Calibrated
3	CSL-43109H	23.12.2021	CO2	34.53 %	34.20%	34.53 %	Calibrated

The readings are within standard range according to the used test method. Analyzer system is operating normally.

Date / Place: 11.07.21/JPVL Nigrie.



*S.K. Choudhury*

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SICK representative signature

Salim Gadkari

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SICK representative Name

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Customer representative signature

Santosh Kumar Choudhury

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Customer representative Name

**CALIBRATION REPORT-DUST**

<b>JAYPEE NIGRIE SUPER THERMAL POWER PLANT</b>		<b>Model: DHT-50</b>	<b>SICK INDIA PVT LTD</b>
<b>Calibration date: 11.07.2021</b>		<b>Equipment Number : 14028363</b> <b>Analyser Installed at : Unit #2 Stack.</b>	<b>Calibration done by : Salim Gadkari</b>
<b>Manual Sampling Done by: M/s Vardan Envirolab, Jaipur, Rajasthan.</b>		<b>Details of Manual sampling: DMP/ENV/090721/02 Dated: 10.07.21</b>	
<b>S.NO</b>	<b>Manual sampling Results in (mg/Nm3)</b>	<b>Instrument Reading in mg/Nm3</b>	
1	41.71	33.57	

With reference to the manual sampling results instrument was calibrated.

Old Calibration factor: 165

New Calibration factor: 205



*S.K. Choudhury*

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SICK representative signature

Salim Gadkari

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SICK representative Name

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Customer representative signature

Santosh Kumar Choudhury

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Customer representative Name

### CALIBRATION REPORT-DUST

<b>JAYPEE NIGRIE SUPER THERMAL POWER PLANT</b>		<b>Model: DHT-50</b>	<b>SICK INDIA PVT LTD</b>
Calibration date: 11.07.2021		Equipment Number : 14028364 Analyser Installed at : Unit #1 Stack.	Calibration done by : Salim Gadkari
Manual Sampling Done by: M/s Vardan Envirolab, Jaipur, Rajasthan.		Details of Manual sampling: DMP/ENV/090721/01 Dated: 10.07.21	
<b>S.NO</b>	<b>Manual sampling Results in (mg/Nm3)</b>	<b>Instrument Reading in mg/Nm3</b>	
1	41.71	51.45	

With reference to the manual sampling results instrument was calibrated.

Old Calibration factor: 586

New Calibration factor:475



S.K. Choudhury

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SICK representative signature

Salim Gadkari

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SICK representative Name

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Customer representative signature

Santosh Kumar Choudhury

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Customer representative Name



**MADHYA PRADESH POLLUTION CONTROL BOARD**

Paryawaran Parisar, E-5, Arera Colony, BHOPAL - 462 016

{0755} 2464428, 2466191 Fax : {0755} 2463742 e-mail: [it.mppcb@rediffmail.com](mailto:it.mppcb@rediffmail.com)

D. No. 1318 / MPPCB/Gorbi/TS Singrauli/ 2020

Bhopal, Dated: 30/04/2021

Executive Director,  
Vindhychal Super Thermal Power Station,  
Post Vindhyanagar  
Distt: Singrauli (MP)

**Subject:** Grant of permission for fly ash filling in Pit 1 of abandoned Gorbi Coal Mines of M/s NCL on Trial Basis.

- Reference:**
1. Your letter 060/ED-V/GORBI/005/3182 dated 23/1/21 and presentation made before the officers of the Board on 25-02-2021
  2. MoU arrived between NTPC Ltd. and NCL dated 03/01/2019
  3. In Principle Approval granted to you for fly ash filling in Gorbi Mines vide letter dated 3101/ MPPCB/ CE II/ TS Singrauli/ 2019, dated 26-11-2019.
  4. "Guidelines For Disposal / Utilization of Fly Ash For Reclamation of Low Lying Areas and Stowing Of Abandoned Mines / Quarries" published by Central Pollution Control Board, March, 2019
  5. TOR issued vide MoEF&CC letter no. J-13011/07/2001-IA-II(T) dated 4-4-2019 and Office Memorandum of MoEF&CC No. 22-13/ 2019-IA-III dated 28-08-2019
  6. MoEF&CC Letter no. J-13011/07/2001-IA-II(T) dated 30-9-2020
  7. Fly Ash Notification, 1999 as amended up to date.

Whereas Fly ash Notification of 14<sup>th</sup> September, 1999 was promulgated and amended from time to time with a view to protect the environment, conserve top soil and prevent the dumping and disposal of fly ash generated from coal or lignite based thermal power plants on land;

And whereas the said notification in the clause 1 (8) (i) & 8 (ii) provides for that no person or agency shall within fifty kilometers (by road) from coal or lignite based thermal power plants, undertake or approve stowing of mines without using at least 25% of fly ash on weight to weight basis; and in case of external dump of over burden or in upper benches of back filling of opencast mines on 25% volume to

volume basis of the total material used; to be done under the guidance of the Director General of Mines Safety (DGMS);

Whereas the GORBI mines of the Northern Coalfield Limited (NCL) situated at Singrauli has been declared abandoned since 01.01.1997 and is filled with acidic water. Also the mine is situated within 50 KM by road from the NTPC Ltd., Vindhyachal Super Thermal Power Station, Vindhyanagar Singrauli;

Whereas for the compliance of the Fly ash notification, 1999 MPPCB has been pursuing with NCL from time to time for providing the abandoned mine to NTPC Ltd. for the disposal of fly ash which is generated daily in huge volume and is accumulated in large quantities in the ash dyke for the want of appropriate avenues for its disposal;

Whereas in the matter of NGT case OA No. 276 of 2013 Ashwani Kumar Dubey vs. Union of India & others, as per order dated 06.12.2017 Hon. NGT has appointed a Core Committee and the committee submitted its report of February 2018 on 03.04.2018 before the NGT and recommended that the Gorbi Mine should be provided for the disposal of fly ash. Hon. NGT vide its order dated 28.08.2018 has accepted all the recommendations of the Core Committee;

Whereas a Oversight Committee under the Chairmanship of Justice (retd.) Rajes Kumar of Allahabad High Court was constituted by NGT vide order dated 28.08.2018 to oversee the implementation of the recommendations of the Core committee, which has on 25.10.2018, 03.11.2018 and 27.12.2018 reiterated that the NCL shall provide Gorbi Mine to NTPC Ltd for the disposal of fly ash and an MoU in this regard be executed between both the parties at the earliest;

And whereas a conditional MoU was finally executed between the two parties NTPC Ltd., & NCL on 03.01.2019 for filling of fly ash in one of the voids, namely Pit 1, of abandoned Gorbi Mine which is filled up with acidic water having a total estimated volume of 14 million m<sup>3</sup>.

Whereas NTPC Ltd., as per the conditions of MoU has approached MoEF&CC for the grant of permission to dispose fly ash generated from Stage II and Stage III of 4x500 Mw of Vindhyachal Super Thermal Power Station, and TOR has been

prescribed by MoEF&CC vide letter dated 04.04.2019 for conducting detailed environmental impact assessment for comprehensive appraisal;

Whereas Central Pollution Control Board has issued guidelines namely "*Guidelines For Disposal/Utilization of Fly Ash For Reclamation of Low Lying Areas and Stowing of Abandoned Mines/Quarries*" in March 2019 which are circulated vide MoEF&CC office memorandum dated 28.08.2019 and in light of that, NTPC Ltd., Vindhyachal Super Thermal Power Station (VSTPS), vide its letter dated 06-09-2019 has sought permission from M.P. Pollution Control Board for filling of 1 million m<sup>3</sup> of fly ash in abandoned Gorbi mine by transporting the fly ash by road in closed bulkers and has also submitted details of various studies that are being conducted by it for ensuring the disposal of fly ash in acidic environment without causing any adverse impact;

Whereas, in light of the facts and circumstances as mentioned above, and after taking a holistic stock of the situation, M.P. Pollution Control Board had granted it's conditional in "Principal Approval" vide its letter dated 26-11-2019, for the disposal of 1 million m<sup>3</sup> of fly ash in Pit 1 of the abandoned Gorbi Mine of NCL to convey the no objection of the Board to allow NTPC Ltd., to go ahead to undertake activities and studies essential for the planning of safe and environmentally sound disposal of fly ash in Gorbi Pit 1 with certain conditions;

Whereas, VSTPS vide its letter dated 23-01-2021 has requested that it has completed the following studies in the fulfillment of the conditions of the "*In Principle Approval*" granted by MPPCB on 26-11-2019:-

- Flora and Fauna Studies by NEERI
- Radio tracer Study by BRIT
- EIA / EMP & Hydrology Study by CMPDI
- Road Transport Impact Assessment Study by Min Mec Consultancy Pvt. Ltd.
- Contour Mapping of Mine Void

and has requested for the grant of permission to conduct trial runs of the 1 million m<sup>3</sup> of fly ash in the Pit no 1 of the abandoned Gorbi Mine, to be transported by road to the site of disposal in closed bulkers and to be disposed in the mine pit in slurry form @ 2000 TPD in the first year, 3000 TPD in the second and third year and 2000 TPD in the fourth and fifth year;

Whereas VSTPS-NTPC Ltd. has presented the case for grant of permission to conduct the disposal of fly ash in the Gorbi Mine pit on trial basis before the officers of the Board on 25-02-2021 and explained the course of proposed actions to be taken;

Whereas it has been proposed that the road transportation of fly ash will be undertaken between 6 PM to 6 AM, and the study report for the permanent mode of disposal of fly ash i.e. Ash Haul Back Study is undergoing which is likely to be completed soon to adopt permanent method for the filling of the fly ash in pit no. 1;

And whereas, the NOC / permission of DGMS is still pending for the disposal of fly ash in the Gorbi Mine Pit, no. 1, for which it has been presented that the permission / consent from the State Pollution Control Board is a precondition for considering the application by DGMS;

Therefore in the light of the facts and circumstances mentioned herein before, M.P. Pollution Control Board accords its permission to the Vindhyachal Super Thermal Power station and conditions of this permission, which are mentioned hereinafter will be incorporated as additional conditions of the consent already granted to the Stage II (XGN Id: 13106 ) and Stage III (XGN Id: 16494 ) units of VSTPS, vide nos. AW-53372 and AW-53374 respectively (presently valid up to 30-06-2022 and 30-11-2021 respectively) u/s 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 for conducting trial runs for the disposal of initially 1 million m<sup>3</sup> of fly ash in Gorbi Mine Pit 1. The conditions are as under:-

1. The permission for under taking trial runs for the disposal of fly ash 1 million m<sup>3</sup> for backfilling in Gorbi Mine Pit No. 1 shall be valid initially for a period of 1 year from the first day of the month of commissioning of the trial runs, which may be renewed annually upon application by the industry subject to the compliance of the conditions mentioned here in after.
2. The approval / permission from the DGMS shall be obtained and a copy submitted to the MPPCB well in advance before the commencement of the trial runs.
3. The fly ash backfilling for the first year shall be carried out @ not exceeding 2000 TPD + 5% in a day .

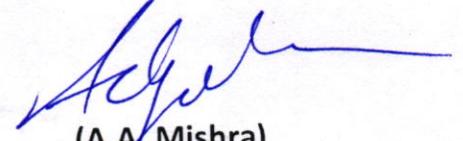
4. The transportation of the fly ash from the generation point up to the Gorbi mine by road shall be undertaken in closed bulkers between 6 PM and 6 AM only and no day time transportation of ash shall be done. No open loading of fly ash in the bulkers as well as any open unloading of the fly ash at the disposal site shall be done.
5. The fly ash shall be disposed in Gorbi Mine Pit 1 in wet / slurry form for which the acidic mine water accumulated in the Pit 1 shall be used and no fresh water shall be used. Unlike transportation, the fly ash disposal can be undertaken in day time also, to exercise proper controls during disposal.
6. The VSTPS-NTPC Ltd. management shall ensure that to prevent any overflow from the mine pit, suitable retaining wall / walls of appropriate height shall be got constructed well in advance before the overflow situation from the pit arises due to increase in water level by fly ash filling.
7. The VSTPS-NTPC Ltd. management shall ensure that the overflow of the acidic mine water shall have to be treated in an ETP as recommended in the "Study Report on Fly ash disposal into Gorbi Mine Voids, NCL" by CMPDI. The report also establishes that the leachate analysis of fly ash, there are certain parameters of heavy metals like Chromium, Copper, Iron, Lead, Manganese, Nickel etc that are exceeding the limits prescribed as per BIS: 10500. Such observations are also substantiated in the NEERI report. Hence a treatment plant of appropriate design and adequate capacity shall be got constructed well in advance before the overflow situation from the pit arises due to increase in water level by fly ash filling and the treated water shall conform to the General Standards for the Discharge of Effluents as per Part A, Schedule VI of the EP Rules, 1986. The ETP sludge, if any, shall have to be disposed through TSDF, as per the characterization,.
8. The VSTPS-NTPC Ltd. management shall follow the monitoring protocol for the surface water, mine water and ground water as recommended in the report by CMPDI as well as NEERI. The seepage shall be monitored by regular testing of the ground water through the piezometers network established for the monitoring by CMPDI.

9. The VSTPS-NTPC Ltd. management shall ensure that to prevent any ingress of rain water from the catchment into the mine pit, a peripheral catch drain of appropriate size, as per the highest rainfall recorded in the area and overland flow assessed, shall be got constructed well in advance so that no rain water from the catchment finds way in the mine pit to increase its water level and make it acidic. The catch drain shall not be used in any case to overflow / discharge the acidic mine water out of the pit. Regular monitoring of the quality of the rain water that is captured and exited away through the peripheral catch drain shall be done and reported.
10. The VSTPS-NTPC Ltd. shall obtain permission / concurrence from the district administration & police department of district Singrauli regarding the route and timings of the fly ash transportation and strictly abide by their conditions / instructions , if any, for the safe and pollution free transportation of the fly ash from the point of generation till the mine pit.
11. No portion of the haul road near the mine pit shall be kuchcha. Only metaled / concrete road should be used for the transportation of fly ash.
12. Regular water sprinkling on the haul route should be undertaken using scientific methods of water spray to achieve maximum dust suppression and to minimize mud formation which can endanger safety of other road users. As far as possible transportation route shall be strengthened, repaired and maintained to keep it free from pot holes, undulations and dust free all the time. Speed limits should be observed by the transport vehicles to minimize the re-suspension of dust.
13. CPCB Guidelines for transportation of fly ash shall have to be followed.
14. As per the conclusions drawn in the Radio Tracer studies conducted by BRIT that further dumping of the fly ash could be continued in the mine void to push the particulate matter towards the mine boundaries of the mine void forcing the labeled fly ash towards the bore wells and to ascertain the effect of leachette in future, VSTPS-NTPC Ltd. management shall ensure that as the disposal of fly ash during the trial runs advances, the management shall conduct regular monitoring of

the ground water in the selected bore wells and others, including the presence of the injected radiotracer SCANDIUM-46 and other heavy metals, acidity and ph etc. to ascertain the leaching effect of the constituents of the fly ash in the ground water. A baseline data of the existing quality of the ground water of the selected bore wells / piezometers / dug wells / bore wells as appearing in the different reports by BRIT, CMPDI & NEERI shall be compiled & submitted to MPPCB in advance for comparison with the future results. Services of BRIT may be engaged for the purpose of detecting the travel of SCANDIUM -49 in ground water aquifers.

15. As recommended in the Flora & Fauna and Ash Characterization Studies by NEERI, regular and frequent monitoring of the water quality, soil quality, bio accumulation of metal contents in flora and fauna, vegetables, fruits, cereals, fodder etc. geochemical and hydro geological studies to ascertain the long term impacts of fly ash in the Gorbi mine Pit be ensured on a long term basis for which a monitoring protocol should be developed and work may be assigned to institute a national repute.
16. The CPCB Guidelines for the disposal of fly ash in the mine void shall be followed and monitoring protocol should incorporate the stipulations mentioned in the Guidelines.
17. The VSTPS-NTPC Ltd. management shall be responsible for taking necessary safety precautions during the loading, transportation and unloading / filling of fly ash in the mine void and implement the same all the time.
18. The study report for the permanent mode of disposal of fly ash i.e. Ash Haul Back Study which has been reported to be undergoing, shall be completed at the earliest and report submitted to the Board for approval of the permanent method for the filling of the fly ash in Gorbi Mine.
19. The violation of the conditions as stipulated above shall be treated as the violations as per the provisions of the Water Act and Air Act.
20. The Board reserves its rights to amend, modify or altogether cancel this consent or any of its conditions as and when deemed necessary.

Please keep this letter, attached with the consent granted to the Stage II and Stage III units of the VSTPS as additional conditions, and acknowledge the receipt.

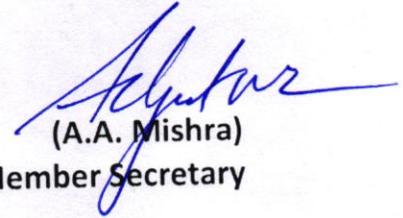


(A.A. Mishra)  
Member Secretary

OK 30/04/2021

Endt. No. 1319/ — — / MPPCB/Gorbi/TS Singrauli/ 2021  
Bhopal, Dated:

1. C.M.D. Northern Coalfields Ltd., Singrauli for information and necessary action.
  2. Collector, District Singrauli for information and necessary action.
  3. Regional Officer, MPPCB Singrauli (MP) for information & necessary action.
- Kindly ensure that the fly ash disposal in Gorbi mines as is undertaken as per the conditions prescribed and submit progress / compliance report from time to time.



(A.A. Mishra)  
Member Secretary

OK


**ENCLOSURE 3 / IV**

hemant Sharma &lt;hsharma1091@gmail.com&gt;

## Regarding rail connectivity for despatch of coal from Block-B project, NCL

1 message

GM BLOCK-B &lt;gmnclbb@gmail.com&gt;

Tue, Aug 31, 2021 at 4:44 PM

To: hsharma1091@gmail.com

Cc: "Shri BalKrishna Sharma GM(Environment)" &lt;gmenv.ncl@coalindia.in&gt;

Dear Sir,

In compliance with Hon'ble NGT's order dated 14.07.2020 in OA 164/2018.

Oversight Committee Recommendations in its first quarterly report	Compliance
<p>The railway connectivity of the Block B Gorbi mine shall be completed within 3- 6 months time to stop the road transportation of the coal. Consequently the operation of the coal loading railway siding of the Block B Gorbi mine shall be terminated thereafter.</p>	<p>The construction work of Rail line connectivity for despatch of coal by rail from Block-B mine, NCL has been completed in March, 2021. After Statutory compliances and trial by Indian Railways, the coal loading into wagons from SILO/Coal Handling Plant, Block-B has started from 6<sup>th</sup> Jun'2021 and continuing since then. At present, approx 3 rakes are being loaded per day as per production plan of Block-B mine. Transportation of coal by road from Block-B mine to Spur-II Siding Singrauli has been stopped.</p> <p>With start of operation of this rail line connectivity &amp; coal loading from SILO/CHP of Block-B Project, NCL, <b>the project has taken a step forward in direction of green mining</b> resulting in following benefits to the locality/nation:-</p> <ul style="list-style-type: none"> <li>• Approx 500 nos. of trucks were plying daily from Block-B Project to Singrauli Spur-II Siding has stopped plying, reducing a huge traffic load on the road.</li> <li>• Reduction in Air &amp; Noise pollution to the great extent for the local population.</li> <li>• It will improve safety on roads and thus result in reduction of accidents on the road.</li> <li>• Diesel consumption will be reduced resulting in decreasing the carbon emission.</li> </ul>

Photographs attached below:

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With Regards

General Manager  
Block-B Project  
NCL.

**"Think before you print and save a tree"**

6 attachments

123RAIL.jpg  
238K

**COAL LOADING & TRANSPORTATION VIA RAIL IN BLOCK B MINE OF M/s NCL**







Dr. Rajesh Rai  
Associate Professor  
Department of Mining Engineering  
+91 9415812616  
[rajeshrai.min@itbhu.ac.in](mailto:rajeshrai.min@itbhu.ac.in)

भारतीय  
प्रौद्योगिकी  
संस्थान  
काशी हिन्दू विश्वविद्यालय



INDIAN  
INSTITUTE OF  
TECHNOLOGY  
BANARAS HINDU UNIVERSITY

Annexure

Ref. No: IIT(BHU)/Min/RR/2021/Cons/NCL/1-4

Date: 13/04/2021

To  
The General Manager  
(S&R/R&D/NI)  
NCL Singrauli  
Madhya Pradesh

**Subject:** Scientific study of fly ash utilization/dumping/Mixing in the OB of the running/active mines of NCL along with its viability and safety aspect of man and machinery.

Dear Sir,

This is in reference to Email from GM (Environment/IMS) dated 12/04/2021. The revised proposal and our terms and condition for fly ash study for Seven Projects viz. Amlorhi OCP, Dudhichua OCP, Jayant OCP Bina Extension OCP, Nigahi OCP, Khadia OCP and JhingurdaOCP are given below:

1. The consultancy charges for seven mines shall be Rs. 67,84,000/- (Sixty Seven Lakh Eighty forty thousand only). A service tax of 18% (Rs 12,21,120/-only) on consultancy charge has to be paid separately. The 50% of the total charges has to be paid in advance before starting of the work. The remaining 50 % has to be paid after submission of the draft report but before submission of final report. The consultancy charges include collection and study of overburden sample from six mines and Fly ash collection from four thermal power plants.
2. The payments for consultancy charges should be made by bank draft / Multi city cheque in favour of "R & D Account", IIT (BHU) payable at SBI, IT-BHU Branch, Branch code – 11445". Alternatively, you may pay the charges through bank transfer with intimation to the undersigned. The detail for bank transfer is also enclosed (Appendix A).
3. The TA/outstation allowance for the above-mentioned work has been included in the total cost.
4. Two copies of the report shall be submitted to you along with softcopy.

5. The time will be five months after the receipt of advance and complete technical data for all six mines. The time will be three months after the receipt of advance and complete technical data for one mine studio only.
6. This is to inform you that Indian Institute of Technology (Banaras Hindu University) has been established by The Act of Parliament (The Institute of Technology (amendment) Act, 2012 (No 34 of 2012)) Dated 20/06/2012. IIT (BHU) is exempted from income tax under section 10 (23C) (iiiab) of INCOME TAX ACT, 1961. Therefore, deduction of INCOME TAX at source is not required. The relevant portion of INCOME TAX ACT and The Institute of Technology (amendment) act is being attached herewith.

Feel free to discuss any matter regarding the above with undersigned.

Thanking you.

Yours faithfully,



**(Rajesh Rai)**

**Appendix – A****BANK ACCOUNT DETAILS FOR ELECTRONIC TRANSFER**

1	Bank Name	State bank of India
2	Bank Branch & Address	State bank of India, IT-BHU Branch, Varanasi – 221005
3	Branch Name & Code	SBI, IT-BHU Branch, Branch code – 11445
4	Account number and Name	34923598941, R & D Account
5	IFS code	SBIN0011445
6	Taxpayer Trade Name	M/S INDIAN INSTITUTE OF TECHNOLOGY (B.H.U.)
7	Taxpayer Legal Name	INDIAN INSTITUTE OF TECHNOLOGY (BANARAS HINDU UNIVERSITY)
8	GST Number	09AAAJI0396R1ZJ

**Department of Mining Engineering  
Indian Institute of Technology  
Banaras Hindu University**

**Scope of the work**

1. Characterization of OB dump material, Fly Ash and the mixed material
2. Determine the Shear strength of Fly Ash and Fly Ash with overburden material test.
3. Numerical simulation of the stability condition of both OB dump and fly ash mixed OB dump
4. Geotechnical tests of Fly Ash and mixed material
  - Specific gravity
  - Liquid limit, %
  - Plastic limit
  - Point load strength index, MPa
  - Slake durability index, %
  - Maximum unit weight, kN/m<sup>3</sup>
  - Optimum moisture content, %
5. Stability analysis with various permutation-combination of dump parameters
6. Degree of Saturation of Fly Ash in monsoon season and behavior of fly ash in this condition
7. Viability and safety aspect of utilization for fly ash in dumping of running mine viz-a-viz man and machinery.

**Methodology**

1. Sample collection for laboratory testing
2. Maps and data will be collected from mine
3. Simulation of slope stability by limit equilibrium method.
4. Simulation of slope stability by finite element method.
5. Design of dump slope and benches by numerical simulation.
6. Comprehensive report will be given covering all the above aspects.

**Details to be provided by Mine officials**

1. All the geometrical data in desired format
2. Samples of overburden and Fly Ash and soil sample from mine.
3. Project Report
4. Latest Approved Mining Plan
5. Geological Maps and other geological details
6. Hydrology of the area.
7. Section of mine Plan

Testing and consultancy charges for six mines		No of Mines	7
<b>A</b>	<b>Overburden dump</b>	Charges	No of samples 4/Mines
	Light Compaction test	6000	28
	GSD	8000	28
	LL+PP	3500	28
	Point Load	2500	28
	Sp Gravity	2000	28
	Permeability test	4000	28
	Slake Durability	5000	28
	Triaxial/Direct Shear test	8000	28
			Total
			1092000
<b>B</b>	<b>Fly Ash</b>		
	Light Compaction test	6000	4
	GSD	8000	4
	LL+PP	3500	4
	Sp Gravity	2000	4
	Triaxial/Direct Shear test	8000	4
			Total
			110000
<b>C</b>	<b>Overburden dump +Flyash (5% 10%, 20% 30%)</b>	Charges	No of samples 4/mines
	Light Compaction test	6000	28
	GSD	8000	28
	LL+PP	3500	28
	Triaxial/Direct Shear test	8000	28
	Sp Gravity	2000	28
	Permeability test	4000	28
	Degree of saturation	10000	28
	Triaxial/Direct Shear test for shear strength	10000	28
			Total
			1442000



अनुसंधान एवं विकास (सारस)/ R&D (SARAS)



CIN- U10102MP1985GOI003160

An ISO: 9001, ISO: 14001 & OHSAS: 18001 Certified Company

पोस्ट- सिंगरौली कोलियरी, जिला- सिंगरौली, म.प्र., पिन 486889/ Post- Singrauli Colliery, Distt- Singrauli, M.P. PIN-486889  
Phone: 07805- 266674, (FAX) 266674 email: hord.ncl@coalindia.in website : [www.nclcil.in](http://www.nclcil.in)

Ref. No. NCL/SGRL/R&D/2021/90

Date: 10.07.2021

To  
Dr. Rajesh Rai  
Associate Professor  
Department of Mining Engineering  
IIT-BHU, Varanasi

Sub: Request for Commencement of Project titled **"Scientific study of fly ash utilization/dumping/Mixing in the OB of the running/active mines of NCL along with its viability and safety aspect of man and machinery for 7 Mines viz. Amlohri OCP, Bina OCP, Dudhichua OCP, Jayant OCP, Jhingurda OCP, Khadia OCP and Nigahi OCP of Northern Coalfields Limited, Singrauli, Madhya Pradesh"** as approved by NCL Board in its 265<sup>th</sup> meeting held on 25.06.2021.

Dear Sir,

With reference to this letter you are being informed that the subject proposal (Copy enclosed) having project duration of 5 months with an estimated cost of Rs. 80.05120 Lakhs (including 18% GST) has been approved by NCL board in its 265<sup>th</sup> meeting held on 25.06.2021.

You are hereby requested to commence the project as per the proposed Scope of Work and Methodology (Copy of Proposal Enclosed). The Project code No. in respect of this proposal is R&D/SARAS/NCL/IIT BHU/2021/05.

As per the Payment terms, 50% of the total cost is to be paid in advance and the rest 50% of the total amount will be provided after the submission of the final reports.

You are also requested to please submit

- Requirement of fund in the enclosed format of Form-II.
- Endorsement Certificates (Form 1-A) (enclosed).
- Certificate under section 197 of Income Tax Act for exemption from TDS deduction.

If the required TDS exemption certificate is not submitted alongwith Form-II, then the fund will be released to IIT-BHU after the deduction of TDS.

The Project will become operative with effect from the month of release of funds as per Form-II.

Thanking You.

Encl: As Above

Yours Sincerely,

P. D. Rathi

General Manager (R&D/NI)  
Northern Coalfields Limited,  
Singrauli

Copy for kind information:

- Director (Tech/Oprn), NCL / Director (Tech/P&P), Director (Finance), NCL
- Director, IIT BHU, Varanasi
- GM(M)/TS to CMD, NCL
- All JPC members (NCL)
- GM (S&R), GM (OCP), GM (Envy/Prese), GM (Finance), GM (E), GM (Amlohri), GM (Bina), GM (Dudhichua), GM (Jayant), GM (Jhingurda), GM (Nigahi), GM (Khadia), RD-RI-(VI),

A. Any Specific Information (S&R) GM (OCP), GM (Envy/Prese), GM (Finance), GM (E), GM (Amlohri), GM (Bina), GM (Dudhichua), GM (Jayant), GM (Jhingurda), GM (Nigahi), GM (Khadia), RD-RI-(VI),  
B. 20446-Amlori Project-Northern Coalfield Ltd accepts the LEGAL responsibility and undertakes that the furnished information is CORRECT & ACCURATE.

6) AFM, NCL HQ

**NORTHERN COALFIELDS LIMITED**

**Action Taken Report for IVth Quarterly report of the Oversight Committee for State of MP  
in compliance with Hon'ble NGT's order dated 14-07-2020 in OA 164/2018**

<b>2. COAL MINES</b>	<b>Oversight Committee Recommendations in its first quarterly report</b>	<b>Remarks as per III<sup>rd</sup> Quarterly Report of the Oversight Committee</b>	<b>Compliance</b>
<b>A.</b>	Road sweeping machines in sufficient numbers shall be procured and regular sweeping of the coal transport roads shall be undertaken to keep them dust free.	M/s Northern Coalfields Ltd. (NCL) has submitted its compliance, which is placed as Annexure 6/III. NCL has reported that 10 road sweeping machines are already deployed and procurement of additional 4 machines is delayed due to Covid 19, and will be completed by July 2021.	Presently, there are 10 nos. of Road Sweeping Machines in operation at different projects of NCL.  <b>Status of Procurement of additional 4 no. road sweeping machines</b>  Two supply orders were placed for additional 4 nos. road sweeping machines (One for 1 no. machine and other for 3 nos. machines). From the above, 1 no. road sweeping machine has been delivered in July, 2021. For remaining 3 nos. road sweeping machines, the firm had requested for delivery extension due to chassis amendment and has not supplied the machines till date. If the firm is unable to supply the machines, the tender will stand cancelled and retendering for the machines will be done.
<b>B.</b>	Paving of the road side shoulders along the coal transport roads shall be undertaken within 3 months under the guidance and supervision of the district administration.	The shoulders of the roads under the control of NCL have been already paved. The other public roads are under the control of district administration / PWD, and according to their instructions they will comply.	Roads being used for coal transportation are provided with paved shoulders by NCL which are under its administrative control.  Other Public roads which are used by coal consumers for coal transportation are under administrative control of PWD Deptt. of State Govt. NCL has no authority on these roads. Matter has been discussed with Regional Office (MPPCB), Singrauli. If any instruction in this matter is received from District Administration, NCL will comply with the same.

**ENCLOSURE 5 / IV**

2. COAL MINES	Oversight Committee Recommendations in its first quarterly report	Remarks as per III <sup>rd</sup> Quarterly Report of the Oversight Committee	Compliance
<b>C.</b>	Maintenance of railway sidings operated by NCL shall be undertaken as per the guidelines published by CPCB titled <i>“Inventorization of Railway Sidings and Guidelines for their Environment Management- March 2015”</i> .	It has been reported that the two railway sidings being operated by NCL are following the CPCB guidelines. Details of pollution control arrangements and photographs have been provided.	<p>Following Pollution control measures have been adopted at Spur-I Morwa Railway Siding (used by Jayant Project, NCL) and Spur II Morwa Railway Siding (used by Block-B Project, NCL) -</p> <ul style="list-style-type: none"> <li>▪ Continuous water sprinkling is done by mobile Water sprinklers/Tankers and fixed water sprinklers provided with automatic functioning for dust suppression.</li> <li>▪ 3 Nos. of Truck mounted dust suppression system with mist gun are under operation from Jayant mine to Spur I Morwa Siding. 1 No. of Truck mounted dust suppression system with mist gun is under operation at Spur II Morwa Siding.</li> <li>▪ Wind breaking wall/ retaining wall has been constructed at Spur I and Spur II all along the track of sidings for arresting air borne dust.</li> <li>▪ RCC road from main road to Spur I siding and Spur II siding have been constructed.</li> <li>▪ Proper drainage system has been developed at Spur I &amp; Spur II Sidings.</li> <li>▪ Sufficient amount of green belt is developed with plantation at both sidings.</li> <li>▪ 1 no. fixed type mist gun has been procured in June, 2021 for effective dust suppression at Siding.</li> </ul> <p>Relevant photographs are attached as <b>Annexure 1.</b></p>
<b>D.</b>	Utilization of fly ash in over burden (OB) of working mines and conducting pilot studies for the same as per Fly ash notification and CPCB guidelines shall be undertaken and 25% use fly ash in the OB dumps shall be done as per Fly Ash Notification, 1999.	However the mine management has again reiterated its difficulties in mixing fly ash in the external over burden of the active mines. They have also submitted that a study “Scientific Study of fly ash utilization / dumping/ mixing in OB of the running / active mines of NCL along with	

2. COAL MINES	Oversight Committee Recommendations in its first quarterly report	Remarks as per III <sup>rd</sup> Quarterly Report of the Oversight Committee	Compliance
		<p>its viability and safety aspect of man and machinery” is being awarded to IITBHU which is likely to be completed by October 2021 and thereafter NCL will submit its application before DGMS for utilization of fly ash in mines.</p>	<p>in December, 2021. Based on the findings of report, NCL will approach DGMS for permission/guidance for utilization of fly ash in mines.</p> <p>Meanwhile, in January 2019, one of the pits of abandoned Gorbi mine of NCL was offered to NTPC - Vindhyachal Super Thermal Power Station (VSTPS) for fly ash filling in mine void. MPPCB has granted permission to NTPC-VSTPS in April 2021 for fly ash filling. <b>NTPC-VSTPS has started filling of fly ash in abandoned Gorbi mine since July, 2021.</b></p> <p>In April 2018, NCL had approached CMPDIL for conducting study of feasibility of fly ash filling in operating mines of NCL. CMPDIL submitted that use of fly ash in OB dumps has several Technical, Environmental and Safety issues. CMPDI had brought it to the notice of MoEF&amp;CC and NITI Aayog from time to time.</p> <p>In June 2016, as per direction of Ministry of Coal, CMPDIL had submitted report on “Utilization of Fly ash in coal mines (UG/OC)”. In this report CMPDIL had concluded that mixing of fly ash with External OB/with OB as backfilling is fraught with serious Safety and Operational difficulties. In that report CMPDI suggested that dumping of fly ash may be allowed in abandoned OC mines on case to case basis.</p> <p>In January 2021, CMPDIL submitted an updated brief on fly ash utilization in Coal Mining Projects, to Ministry of Coal. In this report, it has been mentioned that use of fly ash</p>

2. COAL MINES	Oversight Committee Recommendations in its first quarterly report	Remarks as per III <sup>rd</sup> Quarterly Report of the Oversight Committee	Compliance
E.	Health check up of villagers through mobile medical van be conducted regularly for the detection of the occupational diseases like silicosis, fluorosis etc. and treatment be provided under CSR activities. Record should be maintained and made available to the district health authorities.	It has also being reported that health checkup of villagers and calibration of CAAQMS is being done regularly.	<p>in coal mines is a complex issue and requires detailed deliberation with various stakeholders to arrive at a consensus. The feasibility of use of fly ash in mines, technical, environmental, safety and financial issues need to be deliberated upon in details keeping in view the constraints of coal mining and DGMS regulations. In addition, the regulatory mechanism, identification of environmental issues and their addressal, financial burden and accountability of operation etc. need to be resolved with MoEF&amp;CC before taking a decision on use of fly ash in coal mines or otherwise. Till such issues are resolved, MoEF&amp;CC may be requested to keep on hold use of fly ash in the operational mines. Report is attached as <b>Annexure 2(i) &amp; 2(ii)</b>.</p> <p>Under CSR Activities, medical camps are regularly being organized by NCL Projects for health checkup of nearby villagers. Based on medical conditions observed, medicines/ medical treatment is provided to the villagers "free of cost".</p> <p>During the FY 2020-21, a total of 20 nos. of Health camps were organized by NCL projects despite COVID-19 Pandemic situation. Total 3378 no. of nearby villagers have attended these camps. Prevalent diseases observed were fungal infection, fever, cold, cough, malnutrition, seasonal disease etc. No case of Silicosis/ Fluorosis was observed in the beneficiaries who attended the health camps.</p> <p>For any doubtful case of silicosis/ fluorosis etc. patient will be referred to Nehru Shatabdi</p>

2. COAL MINES	Oversight Committee Recommendations in its first quarterly report	Remarks as per III <sup>rd</sup> Quarterly Report of the Oversight Committee	Compliance
<b>F.</b>	The railway connectivity of the Block B Gorbi mine shall be completed within 3-6 months time to stop the road transportation of the coal. Consequently the operation of the coal loading railway siding of the Block B Gorbi mine shall be terminated thereafter.	It has been reported that the railway connectivity / laying of railway track has been completed in March 2021 and now they are awaiting permission from DRM for rake loading.	Chikitsalay (NSC), NCL for free treatment and the same will be reported to district health authorities by projects.  5 Nos. of Mobile Medical vans are being hired for health checkup in nearby villages.  Moreover, a list of initiatives taken by NCL under CSR to combat COVID-19 during FY 2021-22 is attached as <b>Annexure 3</b> .  The construction work of railway track for transportation of coal by rail from Block-B mine has been completed in March, 2021.  At present coal is being dispatched by railway wagons through SILO loading from Block-B Project.  Relevant photographs are attached as <b>Annexure 4</b> .
<b>G.</b>	The railway sidings operated by NCL should be operated in accordance with the CPCB guidelines.	Remarks as at 'C' mentioned above	Reply as given in Point (C) above.
<b>H.</b>	All the coal mines shall calibrate all the CAAQMS installed by them in 3 months (if not done recently) and submit the report to the committee. Such reports will be useful in checking the error percentage in the results.	Remarks as at 'E' mentioned above	Total 9 nos. of CAAQMS have been installed in different projects of NCL. The data being generated by CAAQMS units is shared online with MPPCB and CPCB servers. Calibration of each CAAQMS unit is being done regularly.  The calibration reports of CAAQMS units for the quarter ended on 31.07.2021 have been attached as <b>Annexure 5</b> .

# Wind Breaking Wall at Spur I Morwa Siding



# Metallic/ Concrete road upto siding (Spur II Morwa Siding)



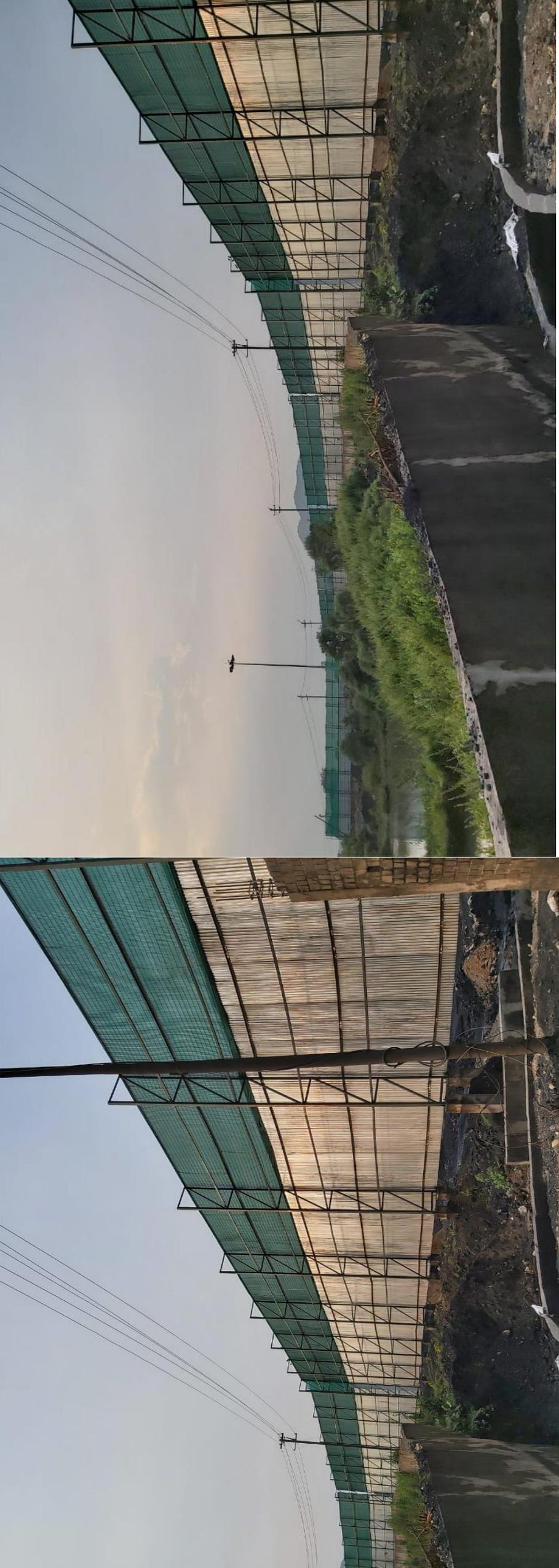
# Development of siltation Pond at Spur II Morwa Siding



Separate Drainage System for  
Collection of Rainy/Storm Water.  
(Spur II Siding)



# Wind breaking wall at Spur-II Morwa Siding



# Fixed water sprinklers (Mist spray) at Spur-II siding”







### **ANNEXURE 2(i) & 2(ii) SUBMITTED BY NCL**

- **The Annexure 2 (i) titled- “ Brief on Fly Ash Utilisation in Coal Mining Projects” and Annexure 2(ii) titled “ CMPDIL report on Utilisation of Fly Ash in Coal Mines” are the same that were submitted earlier also by NCL.**
- **These reports are the repetition of the earlier submissions and have already been incorporated by the Over Sight Committee in its Third Report dated 15-06-21.**
- **The reports are already placed at pg. 81 to 235 (155 pages) of the Third Report. Hence not being uploaded in this report.**

## Annexure - 3

## NORTHERN COALFIELDS LIMITED

CSR initiative of NCL to combat COVID 19 in FY 2021-22				
Sr. No	Activity	Fund provision (Rs. Lakhs)	State	Implementing agency
1	Financial Assistance to Department of Public Health and Family Welfare, Govt. of Madhya Pradesh for installation of 05 nos PSA oxygen plant (1500 LPM) in medical colleges of Bhopal, Indore, Rewa, Jabalpur and Sagar	1000	Madhya Pradesh	Department of public health and family welfare, Govt. of Madhya Pradesh
2	Financial Assistance to District Administration, Singrauli for procurement of Medical equipments and equipping make-shift hospital to prevent the spread of COVID-19 in Singrauli District". {Essential equipment like Pulse oximeter, Thermal Scanner, Oxiflow meter, Oxygen concentrator, advance CT Scan and others (surgical mask, P.P.E. kit, medicine, gloves, face shield, N-95 mask, sanitizer etc.) and Equipping make shift hospital with adequate healthcare facilities and human resource}	700	Madhya Pradesh	District administration, Singrauli
3	Financial Assistance to AIIMS ,Bhopal for establishment of an Oxygen Generating Plant (850 LPM) for treatment of patients suffering from COVID-19"	175	Madhya Pradesh	AIIMS, Bhopal
4	Financial Assistance to Rewa Medical College for procurement of 2 nos. Advance Life Support Ambulance (ALS)	70	Madhya Pradesh	Rewa Medical College
5	Financial Assistance for setting up of a Police Covid care Center at Police Headquarters, Singrauli"	15	Madhya Pradesh	District administration, Singrauli

ANN.3 NCL

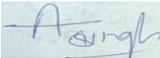
**NORTHERN COALFIELDS LIMITED**

<b>CSR initiative of NCL to combat COVID 19 in FY 2021-22</b>				
<b>Sr. No</b>	<b>Activity</b>	<b>Fund provision (Rs. Lakhs)</b>	<b>State</b>	<b>Implementing agency</b>
6	Financial Assistance to District Administration, Sonbhadra for procurement of Medical equipments to prevent the spread of COVID-19 in District.(Essential Instruments (Pulse Oximeter, Thermal Scanner, Oxygen Flowmeter, Portable X-ray Machine, CBC Machine, Semi Auto Analyzer and other necessary medical equipments etc.) and other materials (Surgical Mask, PPE Kit, Medicine, Gloves, Face Shield, N-95 Mask , Sanitizer etc.)	90	Uttar Pradesh	District administration, Sonbhadra
7	Setting up of Oxygen Generating Plant (400 LPM) in Sonbhadra District.	85	Uttar Pradesh	NCL
8	Provisioning of CSR Fund to NCL Project for taking appropriate measures ( ration kits, medical kits, masks, Sanitization of villages and public places etc) to restrain the spread of Covid-19 in the surrounding villages of their operational area"	80	Madhya Pradesh/Uttar Pradesh	NCL
	<b>Total</b>	<b>2215</b>		

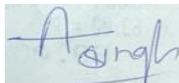
Construction of Railway track completed. Block-B successfully conducted trial of Coal Rake Loading from the newly constructed CHP and Coal is Dispatched through Railway wagons(SILO loading) from project itself.





STATION PROTOCOL FOR CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT CALIBRATION REPORT												
Location of CAAQMS :NCL KHADIA										Date:..11.06.2021		
S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00	10.01	10.23	1.00	1.00	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	199.76	200.10	1.35	1.39	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	201.10	201.13	0.79	0.98	OK
	NO <sub>2</sub>	OK						0.13	0.10			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	201.53	201.42	0.78	0.88	OK
6	PM10 Analyzer							780.41 ug/cm2		0.85	0.98	OK
7	PM 2.5 Analyzer						838ug/cm	856.58 ug/cm2		0.92	0.97	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer are calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												
Signature of Engineer: 												



STATION PROTOCOL												
FOR												
CAAQM STATION UNDER Warranty /ANC/CMCO&M CONTRACT												
CALIBRATION REPORT												
Location of CAAQMS : NCL NIGAH										Date: 12.06.2021		
S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	9.90	10.30	1.16	1.18	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	200.10	198.19	1.63	1.70	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	198.10	199.10	1.21	1.26	OK
	NO <sub>2</sub>	OK						0.21	0.20			
	NO <sub>x</sub>	OK	0.00	0.00	0.00	0.00	200 PPB	198.02	202.10	1.20	1.25	OK
6	PM10 Analyzer						775ug/cm <sup>2</sup>	780.08 ug/cm <sup>2</sup>		0.84	0.92	OK
7	PM 2.5 Analyzer						838 ug/cm <sup>2</sup>	840.15 ug/cm <sup>2</sup>		0.79	0.91	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer are calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												
Signature of Engineer: 												



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS -NCL JAYANT

Date: 16.06.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	10.52	10.85	0.54	0.63	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	199.04	200.06	1.16	1.25	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	199.07	200.04	0.54	0.63	OK
	NO <sub>2</sub>	OK						0.21	0.16			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	201.84	201.57	0.57	0.66	OK
6	PM10 Analyzer						775ug/cm2	791.06 ug/cm2		0.87	0.96	OK
7	PM 2.5 Analyzer						838 ug/cm2	854.29 ug/cm2		0.82	0.90	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer except PM 10 & PM 2.5 are calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS -NCL BINA

Date: 17.06.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	10.85	10.45	1.09	1.10	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	199.64	200.03	2.60	2.67	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	201.72	201.43	0.89	0.97	OK
	NO <sub>2</sub>	OK						0.15	0.12			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	200.85	200.64	0.89	0.96	OK
6	PM10 Analyzer						775ug/cm2	792.04 ug/cm2		0.86	0.93	OK
7	PM 2.5 Analyzer						838 ug/cm2	856.17 ug/cm2		0.90	0.92	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer are calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS :NCL AMLOHRI

Date: 19.06.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	10.03	10.01	0.97	0.99	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	198.05	199.68	1.23	1.30	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	198.10	199.10	1.02	1.09	OK
	NO <sub>2</sub>	OK						0.18	0.15			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	198.02	199.74	1.00	1.09	OK
6	PM10 Analyzer						775ug/cm2	790.63 ug/cm2		0.85	0.95	OK
7	PM 2.5 Analyzer						838 ug/cm2	854.29 ug/cm2		0.83	0.97	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer are calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS : NCL CETI

Date: 21.06.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	10.25	10.01	1.09	1.01	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	198.89	200.03	1.67	1.23	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	201.01	201.01	0.85	0.90	OK
	NO <sub>2</sub>	OK						0.42	0.21			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	199.01	200.61	0.81	0.913	OK
6	PM10 Analyzer	OK					792 ug/cm2	803.3 ug/cm2		0.88	0.90	OK
7	PM 2.5 Analyzer	OK					800 ug/cm2	790.02 ug/cm2		0.89	0.80	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:  
Engineer CSD



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS : NCL BLOCK B

Date: 22.06.2021 Calibration

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	12.10	11.09	0.26	0.27	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	194.12	201.03	1.78	1.86	OK
3	NO <sub>2</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	198.05	199.36	1.20	1.28	OK
	NO <sub>2</sub>	OK						0.17	0.11			OK
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	200.00	198.09	1.05	1.15	OK
6	PM10 Analyzer	OK					817 ug/cm2	819.14 ug/cm2		0.89	0.97	OK
7	PM 2.5 Analyzer						839 ug/cm2	845.30ug/cm2		0.88	0.96	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS : NCL JHHINGURDA

Date: 23.06.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	10.78	11.01	0.70	0.70	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	205.10	199.04	2.00	1.58	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	198.05	203.08	0.91	0.90	OK
	NO <sub>2</sub>	OK	0.00	0.00	0.00	0.00	0.00	0.62	0.10	0.00		OK
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	190.03	199.07	0.99	0.95	OK
6	PM10 Analyzer	OK					847 ug/cm2	850.06ug/cm2		0.94	0.89	OK
7	PM 2.5 Analyzer	OK					825 ug/cm2	819ug/cm2		0.93	0.98	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:  
Engineer CSD



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS -NCL KAKRI

Date:24.06.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	11.03	10.50	0.88	0.90	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	202.08	201.08	1.81	1.79	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	199.09	202.80	0.88	0.85	OK
	NO <sub>2</sub>	OK						0.19	0.16			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	198.90	199.09	0.81	0.80	OK
6	PM10 Analyzer						833ug/cm2	839.03 ug/cm2		0.82	0.78	OK
7	PM 2.5 Analyzer						805 ug/cm2	799.05ug/cm2		0.93	0.98	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS : NCL JHHINGURDA

Date:05.07.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	10.87	10.96	0.70	0.72	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	203.60	201.78	1.58	1.56	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	195.09	201.06	0.90	0.96	OK
	NO <sub>2</sub>	OK	0.00	0.00	0.00	0.00	0.00	0.65	0.27			OK
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	188.08	194.09	0.95	0.99	OK
6	PM10 Analyzer	OK					847 ug/cm2	854.76ug/cm2		0.89	0.93	OK
7	PM 2.5 Analyzer	OK					825 ug/cm2	822ug/cm2		0.98	1.00	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS : NCL CETI

Date: 07.07.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	10.67	10.85	1.01	1.03	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	199.05	198.67	1.23	1.25	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	200.09	199.76	0.90	0.95	OK
	NO <sub>2</sub>	OK						0.27	0.16			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	200.56	199.87	0.913	0.92	OK
6	PM10 Analyzer	OK					792 ug/cm2	807.05 ug/cm2		0.90	0.97	OK
7	PM 2.5 Analyzer	OK					800 ug/cm2	800.03 ug/cm2		0.80	0.86	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:  
Engineer CSD



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS -NCL AMLOHRI

Date: 13.07.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	9.90	9.99	0.99	1.00	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	199.98	200.10	1.30	1.28	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	199.98	200.85	1.09	1.06	OK
	NO <sub>2</sub>	OK						0.16	0.12			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	200.82	199.67	1.09	1.05	OK
6	PM10 Analyzer						775ug/cm2	792.09 ug/cm2		0.95	0.99	OK
7	PM 2.5 Analyzer						838 ug/cm2	850.87 ug/cm2		0.97	0.95	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer are calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS -NCL BINA

Date: 14.07.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	9.99	10.00	1.10	1.09	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	199.90	200.01	2.67	2.66	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	200.98	201.55	0.97	0.99	OK
	NO <sub>2</sub>	OK						0.18	0.12			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	199.09	200.02	0.96	0.98	OK
6	PM10 Analyzer						775ug/cm2	793.09 ug/cm2		0.93	0.95	OK
7	PM 2.5 Analyzer						838 ug/cm2	854.98 ug/cm2		0.92	0.94	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer are calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS -NCL NIGAHI

Date: 15.07.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	10.08	9.99	1.18	1.19	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	201.09	199.09	1.70	1.78	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	199.10	198.09	1.26	1.30	OK
	NO <sub>2</sub>	OK						0.21	0.13			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	199.09	201.08	1.25	1.28	OK
6	PM10 Analyzer						775ug/cm2	782.06 ug/cm2		0.92	0.90	OK
7	PM 2.5 Analyzer						838 ug/cm2	843.07ug/cm2		0.91	0.89	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement: possible												
Specific Observation(s): All analyzer are calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS -NCL KAKRI

Date: 17.07.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	11.05	10.30	0.90	0.92	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	201.02	202.04	1.79	1.8	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	200.07	201.04	0.85	0.92	OK
	NO <sub>2</sub>	OK						0.23	0.17			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	199.09	200.04	0.80	0.87	OK
6	PM10 Analyzer						833ug/cm2	840.09 ug/cm2		0.78	0.82	OK
7	PM 2.5 Analyzer						805 ug/cm2	800.09ug/cm2		0.98	0.99	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS -NCL KHADIA

Date: 21.07.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	10.24	9.99	1.00	0.99	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	198.01	199.03	1.39	1.37	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	200.08	201.04	0.98	0.96	OK
	NO <sub>2</sub>	OK						0.15	0.11			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	199.09	201.02	0.88	0.87	OK
6	PM10 Analyzer						775ug/cm2	781.08 ug/cm2		0.98	0.99	OK
7	PM 2.5 Analyzer						838 ug/cm2	850.02 ug/cm2		0.97	0.99	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer are calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS -NCL JAYANT

Date: 24.07.2021

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	11.00	10.88	0.63	0.64	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	198.83	200.02	1.25	1.26	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	199.02	201.00	0.63	0.66	OK
	NO <sub>2</sub>	OK						0.20	0.14			
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	200.00	200.73	0.66	0.68	OK
6	PM10 Analyzer						775ug/cm2	793.54 ug/cm2		0.96	0.99	OK
7	PM 2.5 Analyzer						838 ug/cm2	851.34g/cm2		0.90	0.94	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK

Maintenance Details / Requirement:

Specific Observation(s): All analyzer are calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.

Signature of Engineer:



**STATION PROTOCOL  
FOR  
CAAQM STATION UNDER Warranty /AMC/CMC/O&M CONTRACT  
CALIBRATION REPORT**

Location of CAAQMS : NCL BLOCK B

Date: 29.07.2021 Calibration

S.No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Per	Post	Span Source	Pre	Post	Pre	Post	
1	CO Analyzer	OK	0.00	0.00	0.00	0.00	10.00 PPM	11.09	12.03	0.27	0.28	OK
2	SO <sub>2</sub> Analyzer	OK	0.00	0.00	0.00	0.00	200 PPB	196.07	204.09	1.86	1.89	OK
3	NO <sub>x</sub> Analyzer											
	NO	OK	0.00	0.00	0.00	0.00	200 PPB	199.07	200.09	1.28	1.32	OK
	NO <sub>2</sub>	OK						0.20	0.15			OK
	NOx	OK	0.00	0.00	0.00	0.00	200 PPB	201.04	199.03	1.15	1.23	OK
6	PM10 Analyzer	OK					817 ug/cm2	822.07g/cm2		0.97	0.89	OK
7	PM 2.5 Analyzer						839 ug/cm2	846.09ug/cm2		0.96	0.96	OK
8	Meteorological Parameter											OK
	Temperature											OK
	Humidity											OK
	Wind Speed											OK
	Wind Direction											OK
	Solar Radiation											OK
	Barometric Pressure											OK
	Rain Fall											OK
9	Computers											OK
10	UPS/ AC / Others											OK
11	Data Display Board											OK
Maintenance Details / Requirement:												
Specific Observation(s): All analyzer calibrated satisfactory, NO2 has no factor, it has defined by NO & NOx. PM10 & PM2.5 Analyzer has calibrated & set factor automatically.												

Signature of Engineer:



Office of the  
Divisional Rly manager (C)  
Dhanabd: 826001

Dhanbad, dt.19.08.21

No.C.710/MPPCB/DHN/21

**Sri H K Sharma**  
**Director-Environment,**  
**MP Pollution Control Board**  
**Bhopal**

Sub: Regarding points for compliance/progress for 4th quarterly report of Oversight Committee against Singrauli (SGRL) and Mahdeiya (MHDA) goods shed.

In terms of the above subject, it is submitted that Dhanbad division has already taken notes of NGT guidelines and conducted inventorisation of Railway goods shed as per guidelines. Accordingly compliance status for pollution control measures of Singrauli (SGRL) and Mahdeiya (MHDA) goods shed as on 31.07.21 for 4th quarterly report of Oversight Committee has been prepared.

It is also inform you that railway has tried to comply with the direction of the statutory body and has taken all possible measures to control dust and other pollutants during loading and unloading as per CPCB guidelines. Most of the coal is delivered to power plants by rail mode of transport. The reliable supply of coal by rail to powerhouses is therefore important for the electric power supply system. In this context, Dhanbad division has developed goods shed to cater Singrauli region where most of the coal mines of Northern Coalfields Limited are located to ensure uninterrupted transportation of coal for various Power Plants/Thermal Plants. Necessary arrangements for pollution control have been made by railways to protect environmental balance.

East Central Railway has taken many steps to streamline its initiatives for environmental balance. Point wise compliance for the above matter is summerised below:-

1. Construction of 20 feet height of concrete Boundary wall along with fencing/protection screen for pollution control at Singrauli Railway siding has been started and it is under progress. It is expected to be completed within **06 months**, albeit the second wave of Covid-19 has delayed the process.

- II. Currently, construction of Boundary wall at Mahdeiya Railway siding is yet to be started due to proposed yard remodeling work. Boundary wall at mahdeiya Railway siding will be constructed with yard remodeling work. For this tender has already been awarded. It will take almost **10 months** to complete the boundary wall work at Mahdeiya.
- III. Regular water sprinkling through water tanker is being done which covers various points like loading/unloading /stacking areas at Railway sidings to control air pollution. More rigorous compliance will be ensured.
- IV. Small and big trees surrounding the Railway Sidings exists. New plantations will be made in vacant area and some after construction of boundary wall so that saplings are not destroyed. The expected results will be reflected in a couple of months.
- V. It is ensured to cover the trucks from Tarpaulin which runs for transportation of coal.
- VI. Loading parties are also advised to follow the guidelines issued by CPCB while loading and unloading of Coal at goods shed.
- VII. Field Supervisors/staff from different department of Railway have been appointed to supervise and take a closer look on loading/unloading activities at the goods shed. Time to time, the activities of the goods shed are communicated by them to the higher authority for smooth functioning of goods shed. They have also been instructed that the loading/unloading parties are following the rule of CPCB guidelines at the goods shed.

Dhanbad division is committed to comply all the norms of Pollution Control and carry out all environmental related work in due course as per availability of funds provided by central Government. The desired result is expected to be visible in coming days.



Sr.Div.Commercial Manager  
East Central Railway  
Dhanbad



hemant Sharma &lt;hsharma1091@gmail.com&gt;

**ENCLOSURE 7 / IV**

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**Third Quarterly report of the Oversight Committee for Singrauli (MP) in compliance with order dated 14-07-2020 in OA 164 /2018**

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**Hemant Bherwani** <h.bherwani@neeri.res.in>

Mon, Aug 9, 2021 at 4:57 PM

To: hsharma1091@gmail.com

Cc: sachin mohapatra &lt;sachin.mohapatra@relianceada.com&gt;, AK Singh &lt;AK.Singh@relianceada.com&gt;, amitosh verma &lt;amitosh.verma@relianceada.com&gt;, Ankit Gupta CSIR-NEERI &lt;a1\_gupta@neeri.res.in&gt;, Yogesh Pakade &lt;yb\_pakade@neeri.res.in&gt;, Atya Kapley &lt;a\_kapley@neeri.res.in&gt;, Padma Rao &lt;ps\_rao@neeri.res.in&gt;, DIRECTOR NEERI &lt;director@neeri.res.in&gt;

Dear Dr. Sharma,

Please find below the updates from CSIR-NEERI in reference to Sasan Power Project:

- We have completed the analysis of total 89 samples which were taken during the first site visit (49 of water, 32 of soil, 05 of ash and 03 of crops/plants). We are in process of collating and analysing the results
- All the above samples are analysed for physicochemical properties and heavy metal characteristics
- CSIR-NEERI has shared an interim draft report with Sasan Power which is under review with them and Sasan Power may be directly approached for the same.
- Another round of sampling has been conducted during last week of June 2021 for consolidation and verification of the results obtained for samples collected during the first site visit. Some additional botanical samples were also collected for further detailed analysis
- As indicated during the last update, due to COVID-19, the maintenance of instruments and delivery of chemicals was delayed. We are working on meeting the timelines of the project and the envisaged delay is already communicated to the sponsor i.e. Sasan Power and revised work order has been issued to CSIR-NEERI in this regards.

Hope this will suffice.

Kind regards,

Hemant Bherwani

Scientist

CSIR-NEERI

M:+919096049515

PS: This is to apprise MPPCB that CSIR-NEERI is governed by a project specific agreement between CSIR-NEERI and Sasan Power Limited for this project. Hence, any request with respect to sharing of data and project related information may directly be communicated to Sasan Power with a copy to NEERI. However, CSIR-NEERI shall be available for any assistance and advice needed for the activity.

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**From:** hsharma1091@gmail.com**To:** "romppcb sgrl" <romppcb.sgrl@gmail.com>, "Mr Rajeev meena" <dmsingrauli@mp.gov.in>, mkjain@ntpc.co.in, munishjauhari@ntpc.co.in, "GM ECR" <gm@ecr.railnet.gov.in>, "General Manager(Environment/IMS)" <gmenv.ncl@coalindia.in>, "HQ WCRIy" <gm@wcr.railnet.gov.in>, cmdsectncl@gmail.com, "P K Sinha"

8/24/2021

Gmail - Third Quarterly report of the Oversight Committee for Singrauli (MP) in compliance with order dated 14-07-2020 in OA 164 /2018

<cmd.ncl.cil@coalindia.in>, "P K Sinha" <cmd.ncl@coalindia.in>, "Jay Saran" <Jay.Saran@essarpower.co.in>, "sachin mohapatra" <sachin.mohapatra@relianceada.com>, "AK Singh" <AK.Singh@relianceada.com>, "amitosh verma" <amitosh.verma@relianceada.com>, "utpal sarkar" <utpal.sarkar@adityabirla.com>, "Y khare" <Y.khare@jalindia.co.in>, "vinod1 sharma" <vinod1.sharma@jalindia.co.in>, hindalco@adityabirla.com, "girija panda" <girija.panda@adityabirla.com>, "cpcb bhopal" <cpcb.bhopal@gmail.com>, biosunil2006@gmail.com, drmdhnecr@gmail.com, "DRM WCRly" <drm@jbp.railnet.gov.in>, "Rakesh Kumar" <r\_kumar@neeri.res.in>, "Hemant Bherwani" <h.bherwani@neeri.res.in>, "Paras Pujari" <pr\_pujari@neeri.res.in>

**Sent:** Monday, August 2, 2021 4:53:10 PM

**Subject:** Re: Third Quarterly report of the Oversight Committee for Singrauli (MP) in compliance with order dated 14-07-2020 in OA 164 /2018

[Quoted text hidden]

Re: Environment Damage Assessment Report finalization (Vindhyachal Ash Dyke Breach)

Paras <prproorkee@gmail.com>

Sat 03-07-2021 12:24

**ENCLOSURE 8 / IV**

To: Munish Kumar Jain <mkjain@ntpc.co.in>

Cc: RAJESH MALIK <rajeshmalik@ntpc.co.in>; Pawan Labhasetwar <pk\_labhasetwar@neeri.res.in>; Atya Kapley <atyakapley@gmail.com>; h bherwani <h.bherwani@neeri.res.in>; parikshit\_verma <parikshit\_verma@hotmail.com>; Sadhana Rayalu <s\_rayalu@neeri.res.in>

\*\*\*\*Security Advisory: This Email has been sent by a Non-NTPC mail ID from Internet. The Actual sender determined by Security Gateway is [prproorkee@gmail.com]. Please do not click links contained in this mail or open attachments unless you recognise the source of this email and know the content is safe. \*\*\*\*

Dear Mr.Jain

We are giving the final touch to the report.

I am sending a letter seeking extension of the project.

My self and Dr.Parikshit will come in the week Julu 19-23 for discussions..I will intimate the exact dates in 2-3 days.

Regards

Paras Pujari

On Sat, 3 Jul 2021, 12:12 Munish Kumar Jain, <[mkjain@ntpc.co.in](mailto:mkjain@ntpc.co.in)> wrote:

प्रिय महोदय / Dear Sir,

In continuation with the trailing communication and with reference to several other interactions we had on the subject matter, you are requested to finalize and mail draft of the report so that it can be finalized at the earliest. Since the matter is is pending before Hon'ble NGT and SC, urgent action is requested.

May pls also note that the contract period for study was only up o 31.03.21 and we require a communication from your side for extension citing the reason for delay.

Kindly do the needful.

सादर धन्यवाद / Thanks and regards.

**MUNISH JAIN**

AGM (EMG), NTPC-VINDHYACHAL.

Mob. 9415342516

**From:** "prproorkee" <[prproorkee@gmail.com](mailto:prproorkee@gmail.com)>

**To:** "Munish Kumar Jain मुनीश कुमार जैन" <[mkjain@ntpc.co.in](mailto:mkjain@ntpc.co.in)>

**Cc:** "RAJESH MALIK" <[rajeshmalik@ntpc.co.in](mailto:rajeshmalik@ntpc.co.in)>, "Pawan Labhasetwar" <[pk\\_labhasetwar@neeri.res.in](mailto:pk_labhasetwar@neeri.res.in)>, "Atya Kapley" <[atyakapley@gmail.com](mailto:atyakapley@gmail.com)>, "h bherwani" <[h.bherwani@neeri.res.in](mailto:h.bherwani@neeri.res.in)>, "parikshit\_verma" <[parikshit\\_verma@hotmail.com](mailto:parikshit_verma@hotmail.com)>, "Sadhana Rayalu" <[s\\_rayalu@neeri.res.in](mailto:s_rayalu@neeri.res.in)>

**Sent:** Thursday, April 22, 2021 10:08:22 AM

**Subject:** Report finalization

\*\*\*\*Security Advisory: This Email has been sent by a Non-NTPC mail ID from Internet. The Actual sender determined by Security Gateway is [[prproorkee@gmail.com](mailto:prproorkee@gmail.com)]. Please do not click links contained in this mail or open attachments unless you recognise the source of this email and know the content is safe. \*\*\*\*

Dear Mr.Jain,

We have worked out most of the things and the finalization of the report requires a physical meeting for certain clarifications and it will be done as soon as the pandemic situation eases.

Best regards,

Paras

Dr.Paras R Pujari

Senior Principal Scientist and Professor, AcSIR

Water Technology and Management Division

Critical Zone Research

CSIR-NEERI

Nehru Marg-Nagpur 440020

Tel: 0712-2249885-88 (Ext 347)

Fax: 0712-2249756

Cell No: 7774014201

skype:paras.pujari

**NCL RAILWAY SIDINGS SPUR I & SPUR II AT SINGRAULI: 09-09-2021**



Singrauli, Madhya Pradesh, India  
Singrauli, Singrauli, Madhya Pradesh 486889, India  
Lat 24.203395 N Long 82.639827 E  
09/09/21 03:14 PM

**Installation of wind breaking wall at  
Spur-2**



Singrauli, Madhya Pradesh, India  
6M42+6RP, Singrauli, Madhya Pradesh 486889, India  
Lat 24.204999 N Long 82.650538 E  
09/09/21 03:13 PM



Singrauli, Madhya Pradesh, India  
6M42+6RP, Singrauli, Madhya Pradesh 486889, India  
Lat 24.204999 N Long 82.650538 E  
09/09/21 03:13 PM



Singrauli, Madhya Pradesh, India  
Singrauli, Singrauli, Madhya Pradesh 486889, India  
Lat 24.20476 N Long 82.64392 E  
09/09/21 02:50 PM

**Installation of wind breaking wall at  
Spur-1**



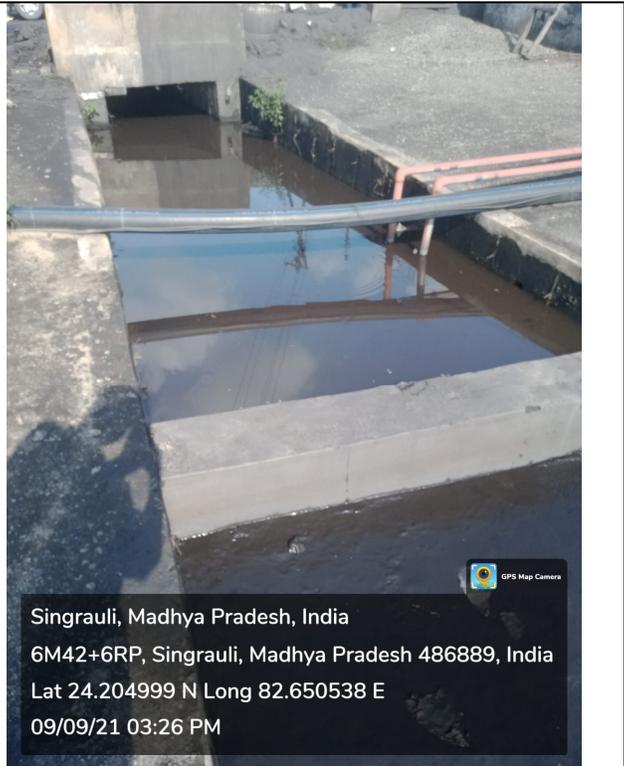
**Damaged wind breaking wall portion  
 in Spur-2**



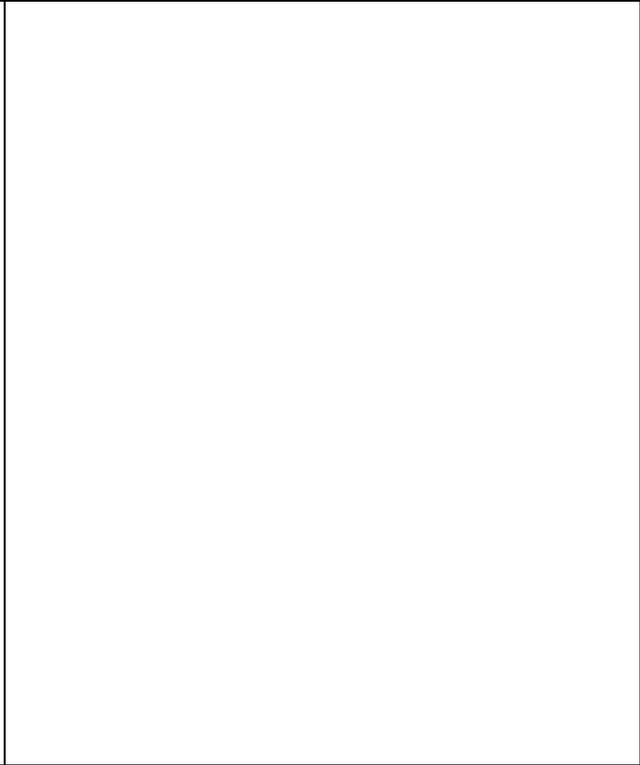
**Coal loading platform at spur-1**



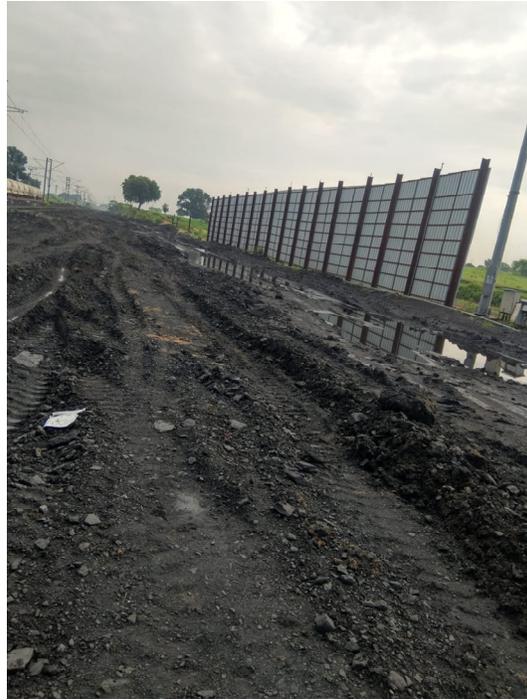
**Garland Drain at the sidings**



**Siltation pond**



**POLLUTION CONTROL ARRANGEMENTS AT BARGAWAN (WCR) RAILWAY SIDING**



**Wind Braeking wall around 100m long & 6 m high with a few fixed type sprinklers**



**Bhalugarh, Madhya Pradesh, India**  
Unnamed Road, Bhalugarh, Madhya Pradesh 486892, India  
Lat 24.205436°  
Long 82.470104°  
09/09/21 08:46 AM

**Pucca Platform of Railway sleepers around 700 m**



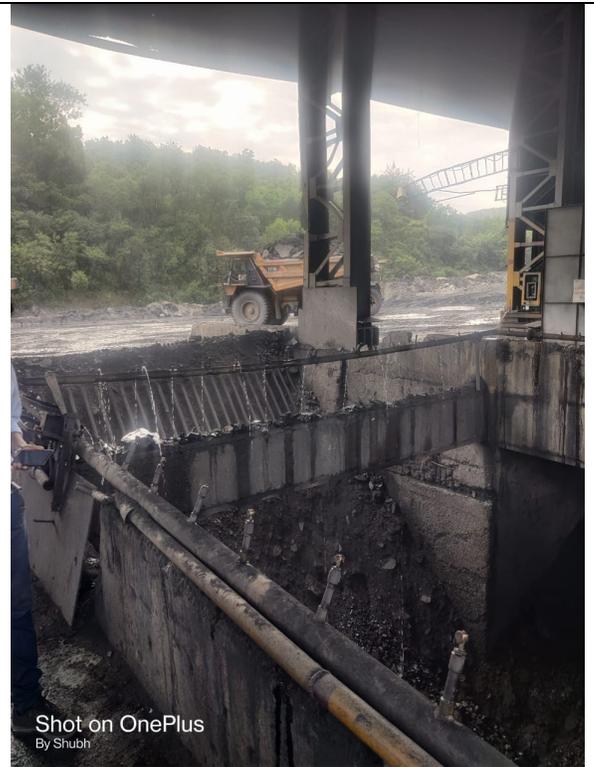
**Kanai, Madhya Pradesh, India**  
6F27+JF3, Kanai, Madhya Pradesh 486892, India  
Lat 24.202258°  
Long 82.465055°  
09/09/21 08:33 AM

**Unmetalled portion around 800 m long**

**CONSTRUCTION OF NEW COAL BUNKER & SILO AT JAYANT MINE**



**Un-loading of coal in coal crusher**



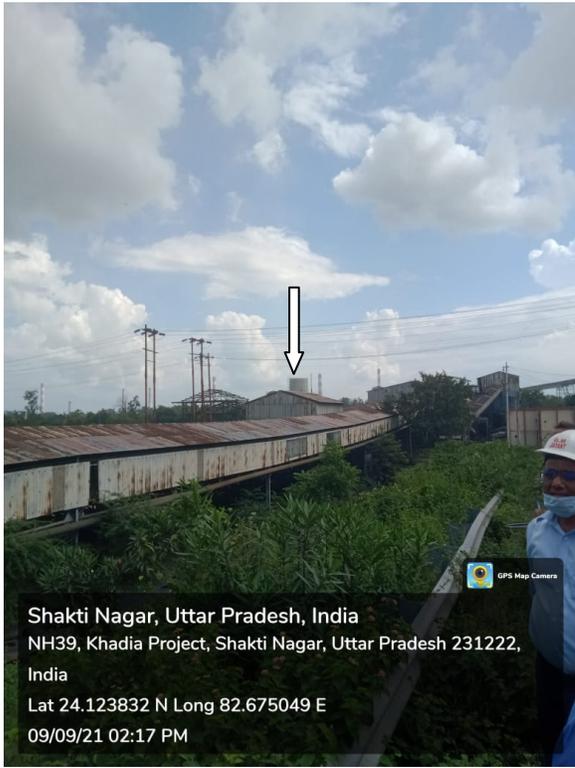
**Fixed water sprinklers**



**Fixed water sprinklers**



**New construction of Coal Bunker & Conveyor to new silo**



Shakti Nagar, Uttar Pradesh, India  
NH39, Khadia Project, Shakti Nagar, Uttar Pradesh 231222,  
India  
Lat 24.123832 N Long 82.675049 E  
09/09/21 02:17 PM

**New silo (under construction)**



Jayant, Madhya Pradesh, India  
Jayant-Morwa Road, Jayant, Madhya Pradesh 486890,  
India  
Lat 24.127696°  
Long 82.657408°  
09/09/21 01:44 PM

**Jayant road**

**FLY ASH FILLING BY NTPC – VINDHYACHAL IN PIT 1 OF ABANDONED GORBI MINE OF NCL**



**Fly ash Filling Station at Pit 1 of Gorbi Mines**





**Acidic Water Filled Pit 1 of Gorbi Mines**

**WAGON LOADING & RAILWAY TRANSPORTATION OF COAL FROM BLOCK B MINE-NCL**



**Coal Silo**



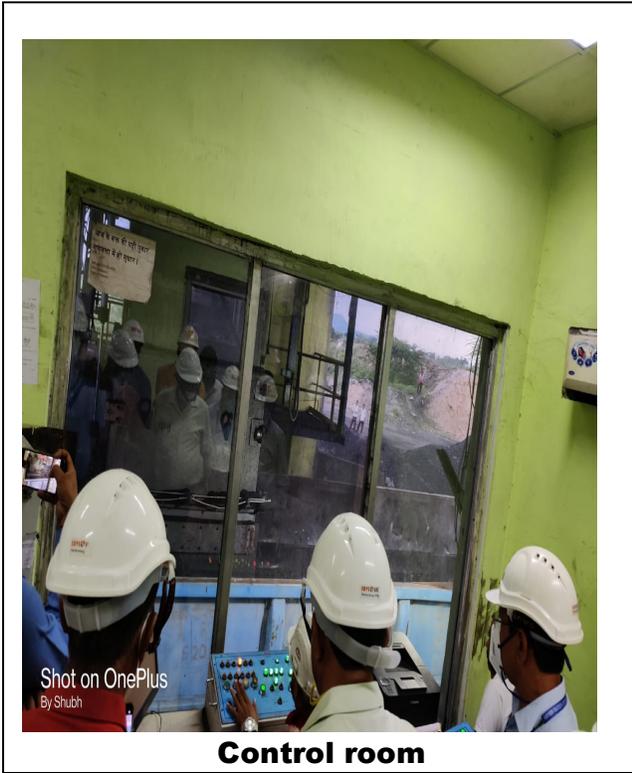
**Coal Loading in railway wagon**



**Loading of coal in railway wagon**



**Coal conveyor belt**



**Control room**

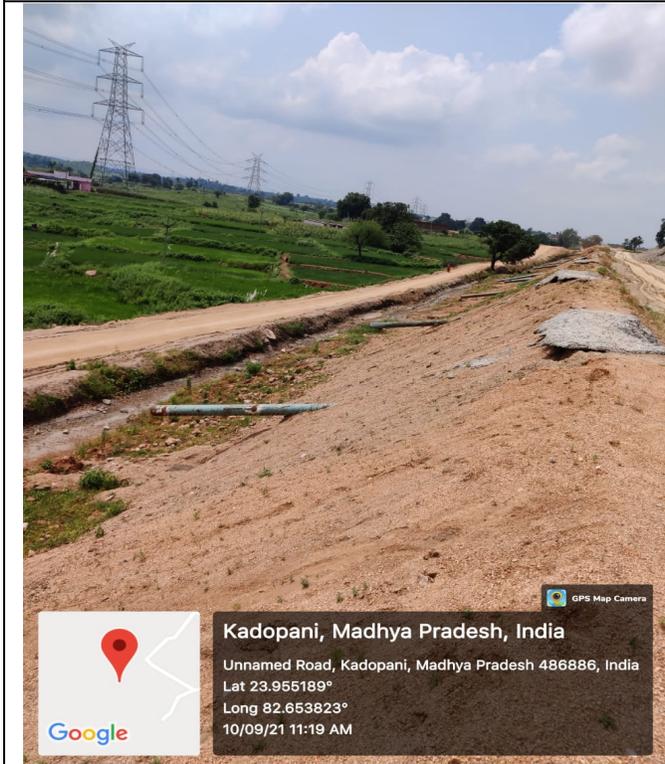
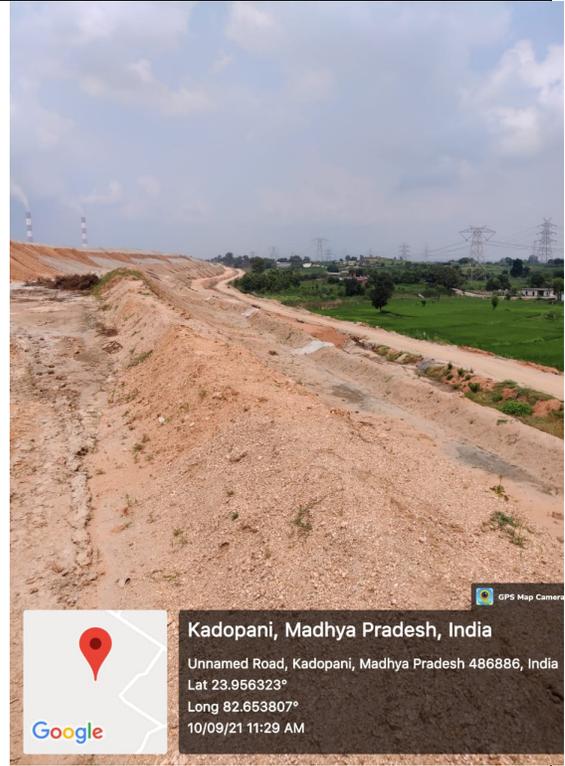


**ASH DYKE RAISING AND ASH FLOW INTO NATURAL WATER BODIES : SASAN POWER LTD**

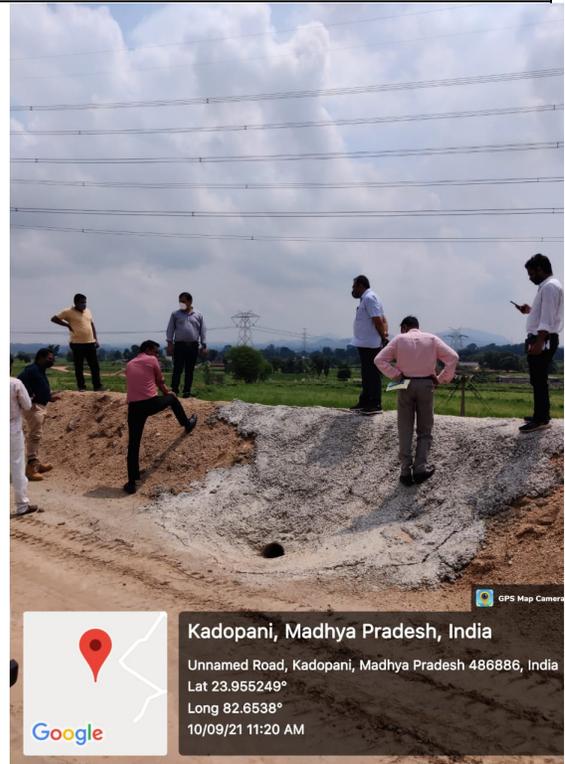
**10-09-2021**

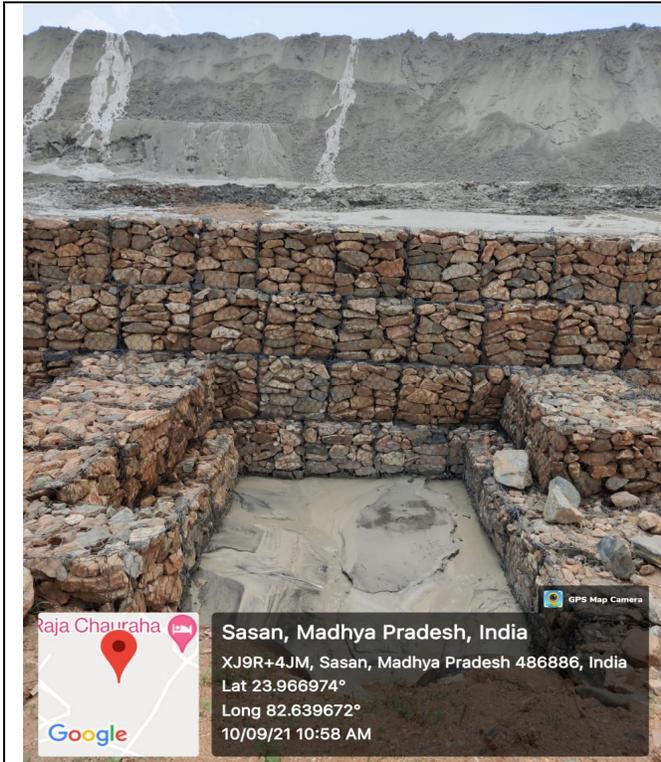


**Outer slopes of ash dyke**

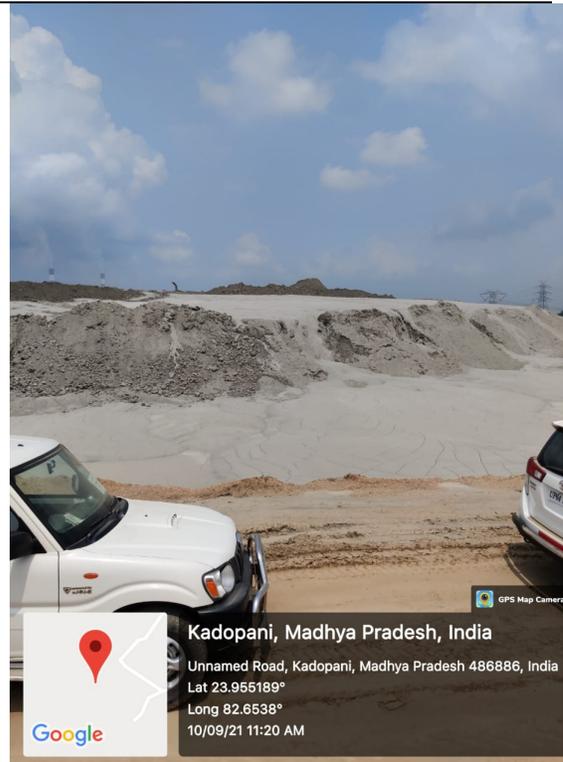


**Water drainage pipeline**

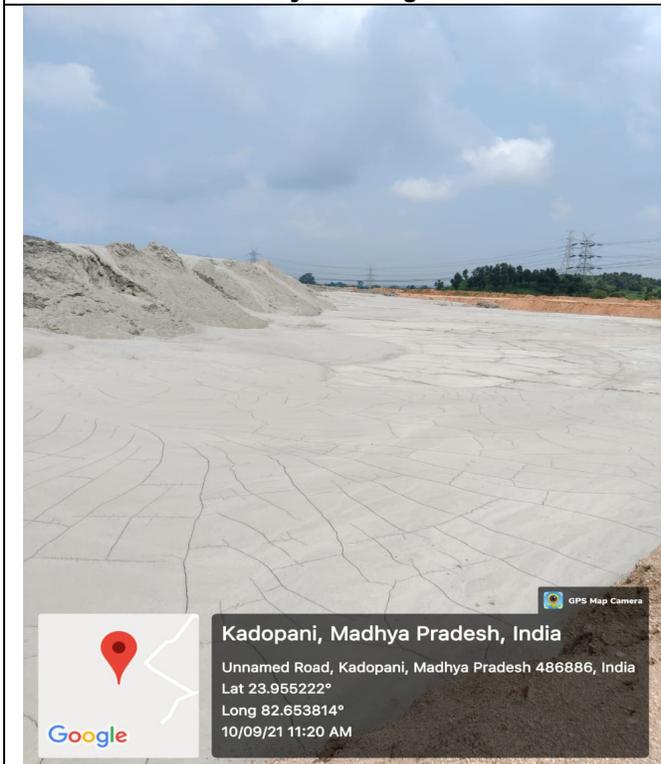




**Construction of Gabion wall to prevent ash flow during dyke raising**



**Loose ash which flow with rains**



**Ash dyke raising being**



**Fly ash deposits in Garra Nala**



**Gabion wall to prevent ash flow during raising**



**Gabion wall construction to prevent ash flow during raising**



**Rain Cuts on the external slopes of the dyke**



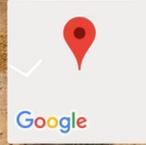
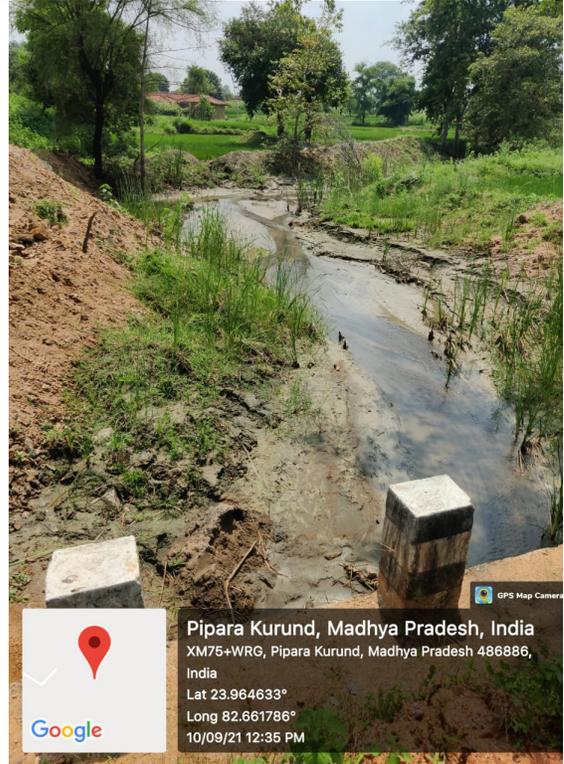
**Fly ash in Thargatta nala**



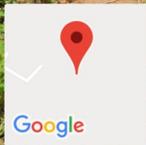
**Flowing of fly ash outside the dyke towards nearby area**



**Fly ash in Thargatta nala**



Pipara Kurund, Madhya Pradesh, India  
 XM75+WRG, Pipara Kurund, Madhya Pradesh 486886,  
 India  
 Lat 23.964633°  
 Long 82.661786°  
 10/09/21 12:35 PM



Pipara Kurund, Madhya Pradesh, India  
 XM75+WRG, Pipara Kurund, Madhya Pradesh 486886,  
 India  
 Lat 23.964669°  
 Long 82.661676°  
 10/09/21 12:44 PM

**Gathering information from the local people**



Raja Chauraha, Madhya Pradesh, India  
 XJ9R+4JM, Sasan, Madhya Pradesh 486886, India  
 Lat 23.966976°  
 Long 82.639664°  
 10/09/21 11:02 AM

THE STP CONSTRUCTION AT HARRAHWA VILLAGE BY NAGAR NIGAM SINGRAULI

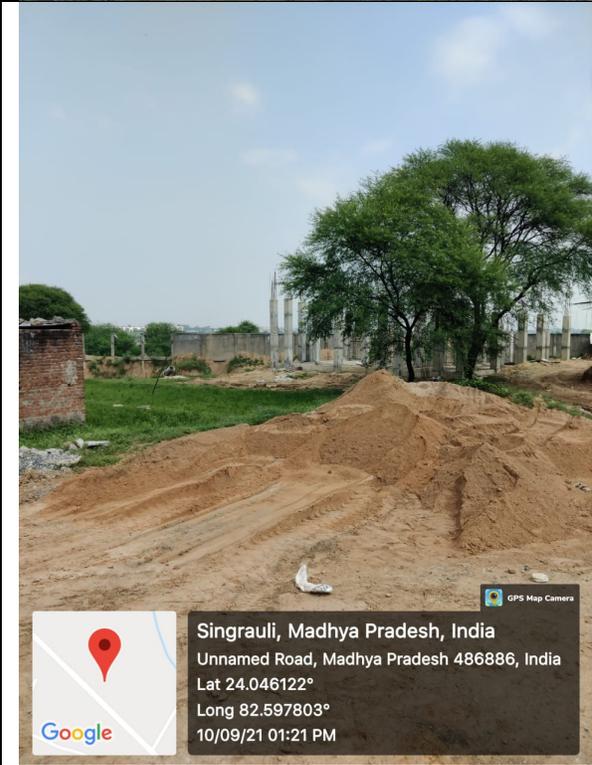


**Under construction STP**



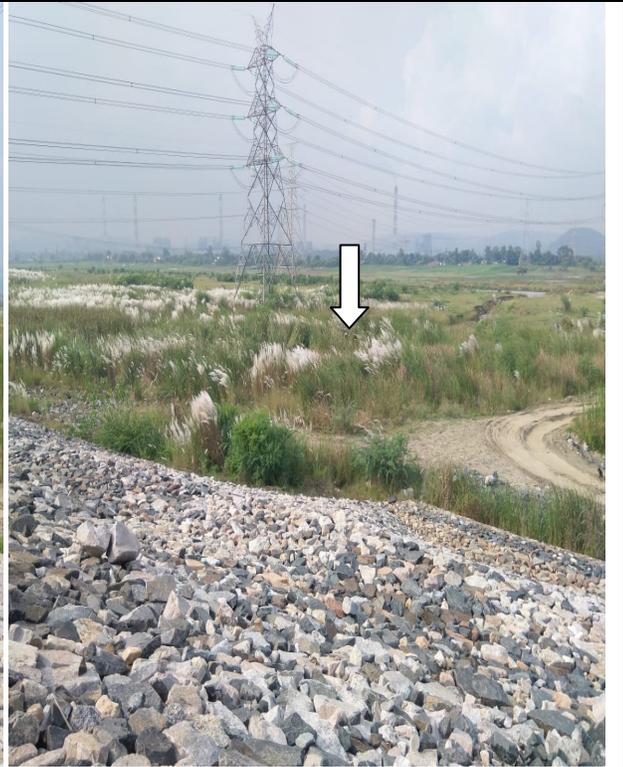


Singrauli, Madhya Pradesh, India  
Unnamed Road, Madhya Pradesh 486886, India  
Lat 24.046113°  
Long 82.597838°  
10/09/21 01:22 PM

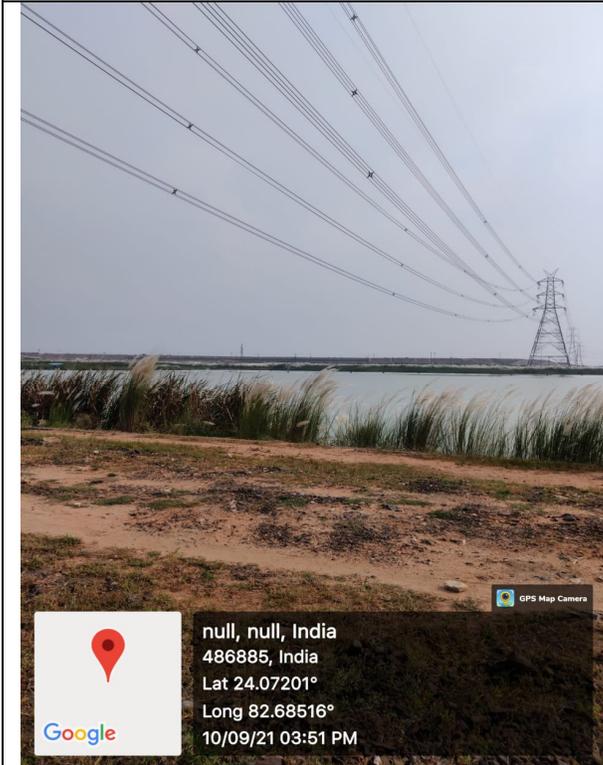


Singrauli, Madhya Pradesh, India  
Unnamed Road, Madhya Pradesh 486886, India  
Lat 24.046122°  
Long 82.597803°  
10/09/21 01:21 PM

**ASH REMOVAL BY NTPC VINDHYACHAL FROM RIHAND RESERVOIR**

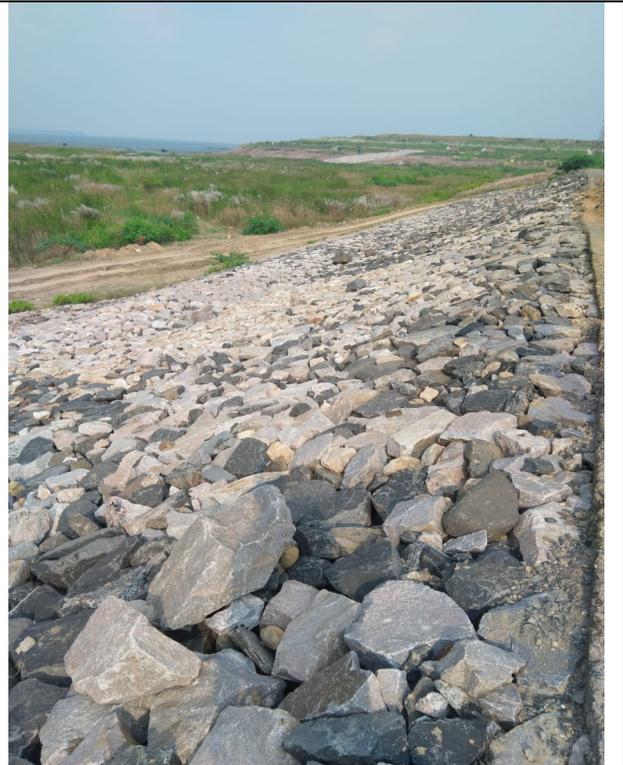


Ash Removed From Rihand Reservoir



null, null, India  
486885, India  
Lat 24.07201°  
Long 82.68516°  
10/09/21 03:51 PM

GPS Map Camera



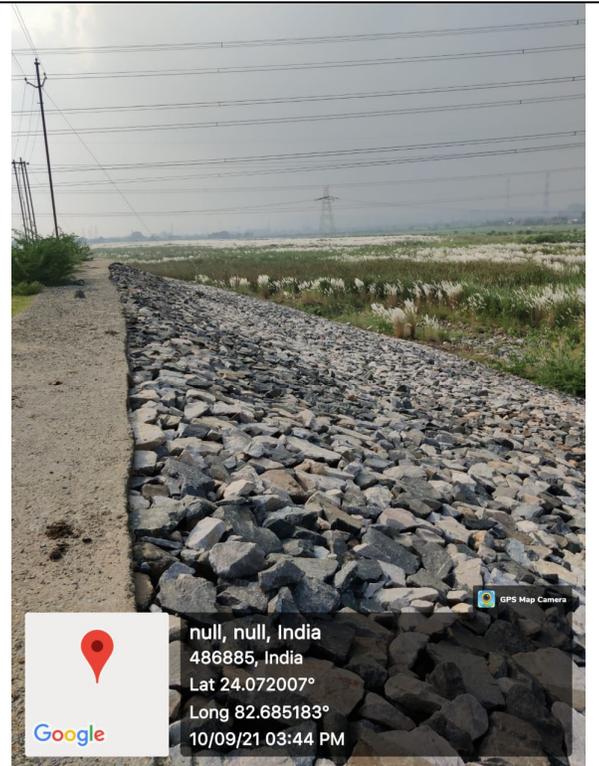
**Stone pitching work completion**



null, null, India  
 486885, India  
 Lat 24.072005°  
 Long 82.685158°  
 10/09/21 03:51 PM

GPS Map Camera

**Ash dyke's outer slope Pitching**



null, null, India  
 486885, India  
 Lat 24.072007°  
 Long 82.685183°  
 10/09/21 03:44 PM

GPS Map Camera



Singrauli, Madhya Pradesh, India  
 Unnamed Road, Madhya Pradesh 486885, India  
 Lat 24.071105°  
 Long 82.688581°  
 10/09/21 03:35 PM

GPS Map Camera

**Dredging Pumps in Operetaion**

**RO WATER PLANT AT BALIYARI VILLAGE INSTALLED BY NTPC,  
OPERATED BY MUNICIPAL CORPORATION, SINGRAULI**



**Waidhan, Madhya Pradesh, India**  
 Unnamed Road, Waidhan, Madhya Pradesh 486886, India  
 Lat 24.061356°  
 Long 82.636358°  
 10/09/21 04:33 PM

**Installed RO Plant by NTPC  
vindhyachal**



**Singrauli, Madhya Pradesh, India**  
 Unnamed Road, Madhya Pradesh 486886, India  
 Lat 24.058034°  
 Long 82.643118°  
 10/09/21 04:34 PM



**Singrauli, Madhya Pradesh, India**  
 Unnamed Road, Madhya Pradesh 486886, India  
 Lat 24.058034°  
 Long 82.643118°  
 10/09/21 04:34 PM

**Information outside the RO plant**

**NGT Oversight committee meeting held in NTPC vindhyachal conference hall :Dated 11.09.2021**



**NGT Oversight committee meeting held on dated 11.09.2021**

