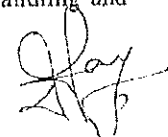


Conditions for Environmental Clearance for the proposed Coal based Thermal Power Plant (405 MW) by I.P.C. India Power Corporation (India) Ltd. at JI. No. - 94, Mouza - Kismatshibrampur, JI. No. - 170, Mouza - Tentulberia, JI. No. - 147, Mouza - Sovarampur, JI. No. - 146, Mouza - Kashbere, PS - Bhabanipur, Haldia, Dist. - Purba Medinipur, West Bengal.

A. SPECIFIC CONDITIONS:

- i. The gaseous and particulate emissions from various process units should conform to the load / mass based standards prescribed by the Ministry of Environment & Forests and the State Pollution Control Board from time to time. At no time the emission level should go beyond the prescribed standards.
- ii. The FBC boilers should be provided with dedicated high efficiency ESP and a tri-flue common stack of height 220m from G.L. as proposed. Space provision shall be kept for retrofitting of FGD, if required at a later date. Stack emission (PM) should not exceed 50 mg/Nm³. Stack emissions should be monitored at regular intervals and records should be maintained.
- iii. Continuous on-line stack monitoring facility shall be installed for measurement of SPM, SO₂ and NO_x. Regular monitoring of ground level concentration of parameters such as PM₁₀, PM_{2.5}, NO_x, SO₂ per the National Ambient Air Quality Standards shall be carried out in the impact zone. At least three nos. ambient air quality monitoring stations should be installed for monitoring of ambient air quality as per the Emission Regulations Part-III of CPCB.
- iv. Prior permission from HDA and concerned authority to be obtained for sourcing of hooghly river water.
- v. Coal handling plant will be provided with Bag Filters for dust extraction. Coal crusher should be provided with dust suppression system. Regular cleaning of ducts should be carried out.
- vi. Covered storage yard for raw materials to be provided. Water sprinkling arrangement should be provided at Coal stockyard. Loading and unloading operations should not be carried out in open areas. Adequate measures should be adopted for controlling fugitive emission during transportation of raw materials and fly ash.
- vii. Adequate measures to be adopted for control of fugitive emission. All transfer points should be provided with Dry fogging system.
- viii. Process effluent discharge is not permitted. Overflow from ash pond if any, in case of emergency shall be recirculated in the system after necessary treatment. Cooling water & boiler blow down should be recycled after treatment. Acid effluent from DM plant must be neutralized before discharge to the guard pond. 'Zero discharge' of effluent should be ensured.
- ix. Fly ash shall be collected from various hoppers like ESP, economizer, air pre-heater etc. in dry form and stored in silos by pneumatic conveying system. Silos must be provided with bag filter for controlling of dust emission.
- x. Bottom ash shall be collected in semi wet extraction system. Ash pond for temporary storage shall be lined with impervious lining viz. stone and Geo-Synthetic lining material to prevent leaching. Adequate safety measures shall be implemented to protect the ash dyke from getting breached.
- xi. Fly ash shall be used in a phased manner as per the provisions of the notification issued by MoEF on Fly ash utilization vide no. S.O. 2804(E) dated 3rd November, 2009. The unit should install Fly ash brick manufacturing unit and should comply with the Order issued by the Department of Environment, Government of West Bengal vide memo no. EN/1819/T-IV-1/001/ 2007 dated 22.08.2008. The unit also comply with the different directions issued by the State Fly Ash Management committee time to time.
- xii. All possible measures should taken to ensure that no secondary emission of dust generated during loading & unloading and transportation of ash for ultimate disposal. Transportation of ash should be carried in closed vessels. If the same is not available ash should be transported in trucks covered with tarpaulin so that there is no spillage of ash during transportation.
- xiii. The industry must comply with the provisions of Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008.



- xiv. Adequate provisions should be made for harvesting rainwater. The unit may develop water body of adequate capacity to harvest rainwater. The harvested water should be used for plantation, firefighting, washing and cleaning etc. Recharging of Groundwater is not permitted.
- xv. Storage facility for auxiliary liquid fuel such as LDO shall be made in the plant area where risk is minimum to the storage facilities. Mock drills shall be conducted regular basis and based on the same, modifications required, if any shall be incorporated in Disaster Management Plan.
- xvi. Ambient noise level should not exceed the permissible limit. The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dB(A) Leq (daytime) and 70 dB(A) Leq (nighttime) and its subsequent amendments.
- xvii. Green belt shall be developed within and around the plant premises in consultation with DFO / West Bengal Wasteland Development Corporation Ltd/ West Bengal Biodiversity Board. Atleast 33% of the land area should be covered by plantation.
- xviii. All internal roads should be concreted / pitched. Proper lighting and proper pathway inside the factory premises should be constructed to ensure safe vehicular movement. Provision of separate pathway for entry and exit of vehicles should be considered. Vehicles should conform to pollution under control (PUC) norms. Proper house keeping shall be maintained within the premises. Solar lighting should be used as far as practicable.
- xix. Health and safety of workers should be ensured. Workers should be provided with adequate personnel protective equipment and sanitation facilities. Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.
- xx. Adequate measures to be adopted to ensure industrial safety. Proper fire detection & protection systems to be provided to control fire and explosion hazards.
- xxi. Corporate Social Responsibility programmes should be carried out, as proposed.
- xxii. The implementation and monitoring of Environmental Management Plan should be carried out, as proposed.

B. GENERAL CONDITIONS:

- i. The project proponent shall comply with all the environmental protection measures and safeguards recommended. Further, the unit must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.
- ii. All the conditions, liabilities and legal provisions contained in the EC shall be equally applicable to the successor management of the project in the event of the project proponent transferring the ownership, maintenance of management of the project to any other entity.
- iii. Provision should be made for the supply of kerosene or cooking gas to the labourers during construction phase. All the labourers to be engaged for construction works should be screened for health and adequately treated before issue of work permits.
- iv. The project proponent should make financial provision in the total budget of the project for implementation of the environmental safeguards. The project authorities will provide requisite funds both recurring and non-recurring to implement the conditions stipulated by the SEIAA along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purpose.



Conditions for Environmental Clearance for the proposed Coal based Thermal Power Plant (405 MW) by M/s. India Power Corporation (India) Ltd. at JI. No. - 94, Mouza - Kismatshibrampur, JI. No. - 170, Mouza - Tentulberia, JI. No. - 147, Mouza - Sovarampur, JI. No. - 146, Mouza - Kashbere, PS - Bhabanipur, Haldia, Dist. - Purba Medinipur, West Bengal.

- v. No further expansion or modifications in the plant should be carried out without prior approval of the State Level Environment Impact Assessment Authority.
- vi. The West Bengal Pollution Control Board, who would be monitoring the implementation of environmental safeguards, should be given full cooperation, facilities and documents / data by the project proponents during their inspection. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to the WBPCB regularly. A complete set of all the documents should also be forwarded to the State Level Environment Impact Assessment Authority.
- vii. In case of any violation of the conditions laid down in this Environmental Clearance, Section 16 of The Environment (Protection) Act, 1986, will be applicable.
- viii. In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by the SEIAA.
- ix. The State Level Environment Impact Assessment Authority reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environment clearance under the provisions of the Environmental (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time-bound and satisfactory manner.
- x. The Project Proponent should inform the public that the project has been accorded environmental clearance by the SEIAA and copies of the clearance letter are available with the State Pollution Control Board/Committee and may also be seen at website of the SEIAA (<http://enviswb.gov.in>). This should be advertised within seven-days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned.
- xi. The Project Authorities should inform the State Pollution Control Board as well as the SEIAA, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work/project implementation.
- xii. Prior Consent-to-Establish (NOC) must be obtained from WBPCB for the proposed expansion project. All other statutory clearances should be obtained by project proponent from the competent authorities.
- xiii. The environmental clearance accorded shall be valid for a period of 5 years for the proposed project.
- xiv. The above stipulations would be enforced along with those under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Hazardous Wastes (Management and Handling) Rules, 1989, the Public Liability Insurance Act, 1991, the Environment Impact Assessment Notification 2006 and their amendments.

Yours faithfully,



(Debaj Ray)

Member Secretary, SEIAA &
Chief Environment Officer

J-13012/16/2014-IA.I (T)
Government of India
Ministry of Environment, Forests and Climate Change

3rd Floor, Vayu Block,
 Indira Paryavaran Bhawan, Jor Bagh Road,
 Aliganj, New Delhi-110003

Dated: 14th October, 2014.

To

M/s. India Power Corporation (Haldia) Ltd.
 Plot X-1, 2 & 3, Block EP,
 Sector V, Salt Lake City,
 Kolkata-700 091

Tel. No. 033-66094300/08/09; Fax: 033-23572452

Sub: Coal Fired Thermal Power Plant at Haldia, Distt. Purba Medinipur, West Bengal by M/s India Power Corporation (Haldia) Ltd. – reg. amendment of EC for Change in Configuration from 3x135 MW to 3x150 MW.

Sir,

This has reference to your letters dated 19.02.2014, 24.02.2014, 28.04.2014, 31.07.2014, 06.08.2014, 20.08.2014 and 21.08.2014 on the above subject. It is noted that the Environmental Clearance for the above project (3x135 MW) was accorded by Department of Environment, Govt. of West Bengal on 12.04.2010.

2. The matter was placed before the Expert Appraisal Committee (Thermal Power) in its 18th Meeting held during 31st July and 1st August, 2014. In acceptance of the recommendation of the EAC and in view of the information/clarification furnished by you with respect to the implementation of the above mentioned power project, the EC dated 12.04.2010 is amended

3. Further, after the specific condition no. (xxii) of the said EC, the following conditions shall be added for compliance:

- (xxiii) *The PP shall pursue the matter regarding firm coal linkage in light of the FSA signed with WBMDTC and considering the EC and FC status of Jaganathpur 'B' Coal Block and the shortage of the coal as mentioned above. Accordingly, the firm coal linkage documents shall be submitted to the Ministry.*
- (xxiv) *The coal transportation shall be by rail to the extent feasible and the transportation by road shall be through mechanically covered trucks, if feasible, else through tarpaulin covered trucks.*
- (xxv) *Avenue plantation of 2/3 rows all along the road shall be carried out by the project proponent at its own expenses in consultation with the State Government Authorities.*
- (xxvi) *Periodic maintenance of the road shall be done by the project proponent at its own expenses and shall facilitate the traffic control on the road in consultation with the State Government Authorities.*
- (xxvii) *The Action Plan formulated by CPCB/SPCB for Haldia shall be complied with.*

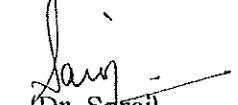
- (xxviii) *The PP shall advertise in the newspaper and place on the website, the amendment issued by the Ministry for public information.*
- (xxix) Vision document specifying prospective plan for the site shall be formulated and submitted to the Regional Office of the Ministry within **six months**.
- (xxx) Harnessing solar power within the premises of the plant particularly at available roof tops shall be undertaken and status of implementation shall be submitted periodically to the Regional Office of the Ministry.
- (xxxi) A long term study on radio activity and heavy metals contents on coal to be used shall be carried out through a reputed institute. Thereafter mechanism for an in-built continuous monitoring for radioactivity and heavy metals in coal and fly ash (including bottom ash) shall be put in place.
- (xxxii) Mercury emissions from stack shall also be monitored on periodic basis.
- (xxxiii) No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the setting up / operation of the power plant.
- (xxxiv) Fly ash shall not be used for agricultural purpose. No mine void filling will be undertaken as an option for ash utilization without adequate lining of mine with suitable media such that no leachate shall take place at any point of time. In case, the option of mine void filling is to be adopted, prior detailed study of soil characteristics of the mine area shall be undertaken from an institute of repute and adequate clay lining shall be ascertained by the State Pollution Control Board and implementation done in close co-ordination with the State Pollution Control Board.
- (xxxv) Green belt shall also be developed around the Ash Pond over and above the Green Belt around the plant boundary.
- (xxxvi) An Environmental Cell comprising of at least one expert in environmental science/ engineering, ecology, occupational health and social science, shall be created preferably at the project site itself and shall be headed by an officer of appropriate superiority and qualification. It shall be ensured that the Head of the Cell shall directly report to the Head of the Plant who would be accountable for implementation of environmental regulations and social impact improvement/mitigation measures.
- (xxxvii) The project proponent shall formulate a well laid Corporate Environment Policy and identify and designate responsible officers at all levels of its hierarchy for ensuring adherence to the policy and compliance with the conditions stipulated in this clearance letter and other applicable environmental laws and regulations.
- (xxxviii) CSR schemes identified based on Public Hearing issues and need based assessment shall be implemented in consultation with the village Panchayat and the District Administration starting from the development of project itself. As part of CSR prior identification of local employable youth and eventual employment in the project after imparting relevant training shall be also undertaken. Company shall provide separate budget for community development activities and income generating programmes.

(xxxix) For proper and periodic monitoring of CSR activities, a CSR committee or a Social Audit committee or a suitable credible external agency shall be appointed. CSR activities shall also be evaluated by an independent external agency. This evaluation shall be both concurrent and final.

4. All other conditions mentioned in the EC dated 12.04.2010 shall remain the same.

5. This issues with the approval of the Competent Authority.

Yours faithfully,


(Dr. Saroj)
Scientist 'F'

Copy to:

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Secretary (Environment), Forests and Environment Department, Government of West Bengal.
3. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
4. The Chairman, West Bengal Pollution Control Board, Parivesh Bhawan, 10A, Block- L.A, Sector 3, Salt Lake City, Kolkata – 700098.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi- 110032.
6. The Chief Conservator of Forests, Ministry of Environment and Forests, Regional Office (EZ), A/3, Chandersekhapur, Bhubaneswar – 751023.
7. The District Collector, Purba Medinipur, District, Govt. of West Bengal.
8. Guard file.

/
(Dr. Saroj)
Scientist 'F'

J-13012/16/2014-IA.I (T)
Government of India
Ministry of Environment, Forest and Climate Change

Indira Paryavaran Bhawan, Jor Bagh Road,
 Aliganj, New Delhi-110003
 Dated: 13.08.2015.

To

M/s. India Power Corporation (Haldia) Ltd.
 Plot X-1, 2 & 3, Block EP,
 Sector V, Salt Lake City,
 Kolkata-700 091
 Tel. No. 033-66094300/08/09; Fax: 033-23572452

Sub: Coal Fired Thermal Power Plant of 3x150 MW at Haldia, Distt. Purba Medinipur, West Bengal by M/s India Power Corporation (Haldia) Ltd. - reg. Extension of validity of EC.

Sir,

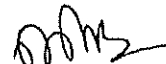
This has reference to your online application dated 21.01.2015 and information/documents dated 27.01.2015, 06.02.2015 and 28.05.2015 on the above subject. It is noted that Environmental Clearance for the above project (3x135 MW) was accorded by Department of Environment, Govt. of West Bengal on 12.04.2010 and an amendment in EC for change in configuration from 3x135 MW to 3x150 MW was accorded by this Ministry on 14.10.2014.

2. Your request was placed before the Expert Appraisal Committee (Thermal Power) in its 36th Meeting held during 19th-20th May, 2015. In acceptance of the recommendation of the EAC and in view of the information, clarification & documents submitted by you regarding implementation of the project, the validity of the said EC is extended **till 12.04.2017** to start the production/operations by the power plant

3. All the conditions mentioned in the EC dated 12.04.2010 and its amendment dated 14.10.2014 shall remain the same.


4. This issues with the approval of the Competent Authority.

Yours faithfully,


 (B.B. Barman)
 Scientist 'F'

Copy to:

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Secretary (Environment), Forests and Environment Department, Government of West Bengal.
3. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
4. The Chairman, West Bengal Pollution Control Board, Parivesh Bhawan, 10A, Block-L.A, Sector 3, Salt Lake City, Kolkata - 700098.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi- 110032.
6. The Additional Principal Chief Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (EZ), A/3, Chandersekhapur, Bhubaneswar - 751023.
7. The District Collector, Purba Medinipur, District, Govt. of West Bengal.
8. Guard file.
9. Website of MoEF&CC


 (B.B. Barman)
 Scientist 'F'

MINUTES OF THE 18th MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE ON ENVIRONMENTAL IMPACT ASSESSMENT OF THERMAL POWER & COAL MINING PROJECTS

The 18th Meeting of the reconstituted expert appraisal committee (thermal power) was held on **31st July and 1st August, 2014** at Indus meeting hall, Jal wing, Ground floor, Indira Paryavaran Bhawan (new building), Jorbagh, New Delhi-110003. The members present were:

- | | | |
|---------------------|---|------------------------------|
| 1. Dr. C.R. Babu | - | Vice Chairman (Acting Chair) |
| 2. Shri T.K.Dhar | - | Member |
| 3. Shri J.L Mehta | - | Member |
| 4. Shri N.K. Verma | - | Member |
| 5. Shri G.S. Dang | - | Member |
| 6. Dr. S.D. Attri | - | Member |
| 7. Dr. S.S. Bala | - | Representative of CPCB |
| 8. Shri N.S. Mondal | - | Representative of CEA |
| 9. Dr. Saroj | - | Member Secretary |

In attendance: Dr. M. Ramesh, Scientist 'D', MoEF.

Shri A.K. Bansal, Dr. Ratnavel, Dr. C.B.S Dutt and representative of WII could not be present.

Item No.1: CONFIRMATION OF THE MINUTES OF THE LAST MEETING.

The Minutes of the 16th EAC meeting held during July 1-2, 2014 were confirmed.

Item No. 2: CONSIDERATION OF PROJECTS

2.1 5x660 MW Dondaichal Coal Based Thermal Power Plant at Village Vikharan, Methi & Varjhadi, in Sindhkheda Taluk, in Dhule Distt., in Maharashtra by M/s Maharashtra State Power Generation Co. Ltd. – reg. EC

1. The ToR for preparation of EIA/EMP report for the above proposal was accorded on 13.05.2011 and extension of validity of ToR was accorded on 03.12.2013. The EIA/EMP report after conducting Public Hearing on 25.03.2014 was submitted to the Ministry for consideration of environmental clearance. The project proponent along with their environmental consultant, M/s Desein Private Limited Consulting Engineers, New Delhi made a presentation before the EAC.

2. At the outset, the committee noted that MoC has allocated Chendipada I and II coal blocks for Phase I and Mahanadi coal block (Macchakata), Odisha for Phase II. The PP is not clear of the EC and FC status of the coal blocks and it seems that there is no significant progress in the EC and FC. Further, the PP has requested MoC for change in coal linkage.

3. After perusal of the presentation made and detailed discussion, the committee opined that the proposal is premature at this stage and **deferred** the proposal. The committee also sought the following additional information:

- i) Status of the EC and FC of the coal blocks allocated. If there is any change in the coal linkage, the status of the EC and FC of the revised coal blocks.*

- iii) *Comparison of the data and predictions of the EIA/EMP report placed before Public Hearing and the addendum EIA/EMP report based on cumulative impacts.*
- iv) *Compliance to the action plan formulated by SPCB.*
- v) *Stack height shall be 220 m since the overall capacity is more than 350 MW.*
- vi) *Aerial view, photographs and action plan for Green belt development.*
- vii) *CSR activities undertaken and proposed along with budget.*
- viii) *Revised and detailed PH action plan along with budgetary provisions.*
- ix) *Response to the complaint received by the EAC/MoEF.*

2.4 Change in Configuration from 3x135 MW to 3x150 MW Coal Fired Thermal Power Plant at Haldia, Distt. Purba Medinipur, West Bengal by M/s India Power Corporation (Haldia) Ltd. – reg. amendment of EC

1. The project proponent made a presentation and provided the following information. EC and “Consent to Establish” for 3x135 MW was accorded by SEIAA, Govt. of West Bengal and WBPCB on 12.04.2010 and 22.06.12 respectively. The subject amendment is being considered at the Centre due to location of the project in CPA of Haldia, even though the moratorium has been lifted. The Company has also entered into Power Purchase Agreement (PPA) with WBSEDCL for the power generated from the Plant. An amount of Rs. 1,500 crores was spent for the construction of the project and another Rs. 1,500 crores will be spent to complete the project. The project carries extreme significance in West Bengal, as most of power generated will be supplied to the state.

2. The construction of the said TPP was conceived with a configuration of 3x135MW capacity. This was later optimized by OEM Supplier, M/s BHEL to 3x150 MW with better technology PF boiler having higher efficiency, resulting-in lower unburnt carbon losses. The turbine heat rate, station heat rate and boiler efficiency of 150 MW units will be 1998 KCal/KWH, 2326 KCal/KWH and 85.9 % respectively as against 1940 KCal/KWH, 2460 KCal/KWH and 78.86 % respectively for 135 MW units. This change in configuration can be accommodated in the allocated land by Haldia Development Authority and cause reduction in the pollution load.

3. The EIA report prepared prior to the EC dated 12.04.2010 based on blending of domestic coal (75%) sourced either through linkage or captive coal block and imported coal (25%). MoEF is mandating requirement of firm coal linkage from 01.11.2010 and EC &FC for the coal source from 19.04.2012. Subsequent to the EC, FSA was signed by the PP with WBMDTC on 01.03.2011, wherein it is stated that 20% of the total coal extracted will be

supplied to the project from Jaganathpur 'B' Coal Block. The geological report prepared by Tata Consulting Engineers Ltd. engaged by CMPDI for Jaganathpur 'B' Coal Block states that the net in situ reserves of 169.57 million tonnes of coal have been estimated in the block and with a proven reserves of 152.75 million tonnes. From this, it is clear that the required quantity of coal for the project is met through the FSA. The annual production capacity as per the mine plan referred to is 0.8 MTPA.

4. The ash and sulphur contents (%) of the said coal block range from 18.6 to 43.7 and 0.38 to 0.64 respectively. L2 Schedule of BHEL shows that the first unit will be commissioned in November 2015, which matches the commercial production of the coal block as per mine production plan. In case the TPP get commissioned earlier than the mine operational date, the PP shall use coal of similar grade by sourcing through e-auction. During the course of last few years, e-auction has been in the vicinity of 15-20 million tonnes on the subsidiaries of Coal India i.e. ECL, MCL and CCL. In the near future as per the initiative taken by Ministry of Coal, more coal is likely to be available from captive miners and supplies of coal mined by them. It is planned to transport by rake to Durgachak and Electrosteel sidings in Haldia and further by road (3-4 km) to the project through specially designed covered trucks. The subject shall be pursued with WBMTDC on continuous basis. The usage of imported coal is not being considered at present due to the cost economics. *The committee noted that as per the FSA, 20% of the coal from Jaganathpur 'B' Coal Block (0.8 MTPA) is allocated for the project which will be only 0.16 MTPA as against the requirement of 2.03 MTPA. The shortage of 1.87 MTPA of coal will be met through e-auction as proposed by the PP.*

5. The CSR activities undertaken and proposed include socio economic development of the locals by providing necessary support for education/training to students and training to Self Help Group (SHG), medical support to the locals by organizing medical camps, health and hygiene camps and capacity building of Govt. Health Centre, strengthening education and cultural fibre of the community by providing funding to clubs and associations, conducting sports tournaments etc. and local infrastructure development by developing roads, tubewells, toilets etc.

6. *Based on the information and clarifications provided by the Project Proponent and detailed discussions held on all the issues, the committee recommended the proposal for Change in Configuration from 3x135 MW to 3x150 MW and stipulation of the following conditions. Further, the Committee recommended that the conditions which were not stipulated in the EC accorded by SEIAA, but being stipulated by the Ministry be also stipulated.*

- i) *The PP shall pursue the matter regarding firm coal linkage in light of the FSA signed with WBMDTC and considering the EC and FC status of Jaganathpur 'B' Coal Block and the shortage of the coal as mentioned above. Accordingly, the firm coal linkage documents shall be submitted to the Ministry.*
- ii) *The coal transportation shall be by rail to the extent feasible and the transportation by road shall be through mechanically covered trucks, if feasible, else through tarpaulin covered trucks.*
- iii) *Avenue plantation of 2/3 rows all along the road shall be carried out by the project proponent at its own expenses in consultation with the State Government Authorities.*

iv) Periodic maintenance of the road shall be done by the project proponent at its own expenses and shall also facilitate the traffic control on the road in consultation with the State Government Authorities.

v) The Action Plan formulated by CPCB/SPCB for Haldia shall be complied with.

vi) The PP shall advertise in the newspaper and place on the website, the amendment issued by the Ministry for public information.

2.5 1x600 MW Coal Based Thermal Power Plant at villages Barela & Gorakpur, in Ghansore Tehsil, in Seoni Distt., in Madhya Pradesh by M/s Jhabua Power Ltd. - reg. amendment of EC for temporary permission for road transportation of coal.

1. The PP made a presentation and provided the following information. EC was accorded for the above project on 17.02.2010. About 90% construction work of proposed thermal power plant has been completed and it will be ready by September 2014 for COD. The PP had proposed the transportation of coal from coal pit-head to plant site by way of railway. Work for connection of railway network to plant site is in advanced stage. However, the work is not complete; hence, it is proposed to transport coal by way of road for the interim period of 3 years from September 2014 to August 2017.

2. Regarding the status of railway line, In-Principle Approval and DPR Approval were accorded on 10.08.2010 and 26.08.2012 respectively. The ESP approval has been applied for on 28.08.2013 and is under approval in SECR-Nagpur Division. The railway route length is 68 km (Jabalpur to Binaiki) and 12.15 km outside and inside the plant respectively. The outside track conversion from narrow to broad gauge is about 65% complete. It is proposed to take-off from Binaiki station which falls under Jabalpur-Gondia Section. Since Jabalpur-Gondia Section is under Gauge Conversion stage; the Engineering Scale Plan (ESP) submitted to M/s South East Central Railway in August 2013 is still under approval. Without formal approval of ESP, the PP cannot move ahead for execution of the railway line.

3. The proposed route of coal transportation by road is Gosalpur Rly. Station-Jabalpur Bypass-Bargi- Dhuma-Lakhnadon-Mehta-project site which is about 162 km. The turn around time for each truck is 10 hrs and 8 hrs during day time and night time respectively. The coal requirement is 8767 tonnes/d for which 351 trucks of coal @25 MT would be required. The total traffic load for coal transportation is $351 \times 2 = 702$ truck trips (to and fro) per day. The impact on AAQ due to the proposed increase in road traffic was assessed and the resultant concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x would be within the NAAQS.

4. The assessment of proposed road for its categorization & carrying capacity as per IRC: 64-1990 – Guidelines has been carried out. Route survey has been carried out at 16 locations and the observation on road condition & width made. Traffic surveys were carried out as per IRC: 9-1972- Traffic Census on Non-Urban Roads. The traffic measured was converted into equivalent Passenger Car Units (PCU) as per IRC: 64 -1990. The carrying capacity of the roads has been assessed based on current traffic, proposed traffic and road width. It was observed that all the roads were black topped and in good condition. The average width was found to be 7.35 m with width of 4.0 m to 17.4 m. No bottlenecks & issues were found at any location at the time of study and there were no traffic jams. When the PCU projections for the future percent utilization were estimated it was found that the carrying capacity (as per IRC 64-1990) were within limits for Traffic Census Points except near JPL plant (151% utilization)

MINUTES OF THE 36th MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE ON ENVIRONMENTAL IMPACT ASSESSMENT OF THERMAL POWER & COAL MINING PROJECTS

The 36th Meeting of the reconstituted Expert Appraisal Committee (Thermal Power) was held on **19th-20th May, 2015** at Brahmputra Meeting Hall, Vayu Wing, First Floor, Indira Paryavaran Bhawan (New Building), Jorbagh Road, New Delhi-110003. The members present were:

- | | | |
|------------------------|---|---------------------------------|
| 1. Prof. C.R. Babu | - | Vice Chairman (Acting Chair) |
| 2. Shri T.K.Dhar | - | Member |
| 3. Shri A.K. Bansal | - | Member |
| 4. Shri G.S. Dang | - | Member |
| 5. Shri N.K. Verma | - | Member |
| 6. Shri N.S. Mondal | - | Member (Representative of CEA) |
| 7. Dr. S.S. Bala | - | Member (Representative of CPCB) |
| 8. Ms. Sanchita Jindal | - | Member Secretary |

In attendance: Dr. M. Ramesh, Scientist 'D', MoEF&CC.

Shri J.L Mehta, Dr. C.B.S Dutt, Dr. S.D. Attri, Dr. Ratnavel, and Dr. Asha Rajvanshi were not present.

Item No.1: CONFIRMATION OF THE MINUTES OF THE LAST MEETING.

The Minutes of the 34th EAC meeting held during 29th-30th April, 2015 were confirmed with the following correction.

The proposal No. 2.4 shall be read as, "*Marwa Thermal Power Plant of 2x500 MW at Marwa, District Janjgir Champa in Chhattisgarh by M/s Chhattisgarh State Power Generation Company Ltd. - For Reconsideration for Extension of EC*".

Item No. 2: CONSIDERATION OF PROJECTS

2.1 Barethi Super Thermal Power Project of 2640 (4x660) MW at Villages Barethi, Basari, Sandni & Satna, Tehsil Rajnagar, District Chhatarpur, Madhya Pradesh by M/s NTPC Ltd. - For EC.

The PP along with their environmental consultant, EMTRC Consultants Pvt. Ltd., Delhi made a presentation and inter-alia provided the following information:

- (i) ToR for carrying out EIA study for Barethi STPP (6X660 MW) was accorded by the Ministry initially on 09.09.2010, which was valid till 08.09.2013. Public Hearing was conducted on 17.06.2011 and the final EIA report was submitted to the Ministry on 18.10.2011. However, the same was not considered by the Ministry due to non-availability of firm coal linkage. Accordingly, the Project proponent (PP) had applied for fresh ToR for revised capacity of 2640 (4X660) MW, Stage-I and also requested for exemption of Public Hearing (PH).
- (ii) ToR for carrying out EIA study for Barethi STPP of 2640 (4X660) MW was accorded on 25.07.2014 with PH exemption as there was no change in the location of project site and no TPP or any other industry came up within 10 Km radius from the project site

could not be taken up till the revised Mid-Section take off arrangement was received from East Coast Railway (ECoR) in May, 2014. The DPR preparation as per the revised Mid-Section take off arrangement is under progress. The land acquisition process is also being revisited due to the variation in the alignment of the Railway siding and provision of another loop line. The funds towards land acquisition have been deposited to Government of Odisha on 15.01.2015. Since the Railway Siding will take considerable time, the PP needs to transport coal by Rail and Road from Mahanadi Coalfields as an interim arrangement. Permission was also obtained for utilizing the Rajathagarh railway siding which is located just 18 km from the Project Site. Hence, permission for alteration in the coal transportation route and road transportation of coal as an interim arrangement is also sought.

2. It was observed by the Committee that so far not a single CSR activity has been undertaken by the PP and no green belt has been developed. The Committee expressed its unhappiness about it. The PP assured to undertake the same immediately. The Committee asked the PP to give an undertaking for the same providing of the activities and funds for these. The requisite undertaking has been submitted by the PP stating that as per EC condition, the projects worth of Rs. 2.5 cores (one time capital investment) to be taken up under the CSR activities will be finalized with the District Authorities & Rehabilitation and Peripheral Development Advisory Committee (RPDAC) and shall be implemented within next one year. Further, they will take up the green belt development immediately and plant one lakh saplings within the next one year.

3. *Based on the information and clarifications provided, the Committee noted that the project is in an advance stage of implementation and decided that, in public interest, the request for extension till 13.05.2017 only can be agreed in accordance with the provisions of EIA Notification, 2006. The Committee further recommended that additional conditions which were earlier not prescribed but relevant now be stipulated while issuing the extension of validity. The undertaking given by the PP should also be made as the condition.*

4. *Regarding the amendment in EC for coal transportation, the Committee recommended that a separate application shall be made by the PP after conducting a detailed study on the impact of transportation of coal by road on the environment and people in the area.*

2.9 Coal Fired Thermal Power Plant of 3x150 MW at Haldia, Distt. Purba Medinipur, West Bengal by M/s India Power Corporation (Haldia) Ltd. - For Extension of validity of EC.

The PP made a presentation and inter-alia provided the following information-

(i) EC was accorded to the above proposal (3X135 MW) by SEIAA, West Bengal on 12.04.2010. Subsequently, Application was made to SEIAA on 20.04.2011 for change in configuration from 3x135 MW to 3x150 MW due to optimization done by BHEL. However, due to the moratorium in Haldia and its lifting only on 17.09.2013 etc., the amendment of EC for change in configuration from 3x135 MW to 3x150 MW was accorded by the Ministry on 14.10.2014. Consent to Establish for 3x150 MW was accorded by WBPCB on 12.11.2014. As the original EC expires on 12.04.2015, an application was made for extension of validity in January, 2015.

(ii) Out of the project cost of Rs. 2,665 Crores, the expenditure incurred till 30.04.2015 is Rs.1,700 Crores. The Engineering and installation of Chimney were completed. The Boiler, Turbine, Balance of Plant (BoP), Water System and Plantation were 70%, 60%, 60%, 95% and 30% completed. The photographs of various units/facilities and green belt

depicting the progress made were also shown. The COD of Unit-I, II & III are targeted for 30.12.2015, 30.12.2016 and 30.11.2017 respectively. However, considering uncertainty of supply of materials and other unforeseen situations, extension of validity of EC is requested till 31.12.2018.

(iii) Regarding coal linkage, earlier it was proposed to source coal from Jagannathpur B Block and through e-auction. Due to the de-allocation of all the coal blocks by the Hon'ble Supreme Court, it is now proposed to source all the coal through e-auction till firm coal allocation is made available. The PP is participating in the auction of coal blocks. The sulphur and ash contents of the coal shall be restricted to 0.64% and 43.7% respectively as stipulated by the Ministry.

(iv) Upon the recommendation of the Committee, the PP has submitted the details of CSR activities executed & proposed, action plan for green belt development and revised Form-I. An expenditure of about Rs. 1.43 Crores has been incurred on CSR activities till date and an amount of Rs. 1.58 Crores is earmarked for CSR activities during the construction phase of the project i.e. 2015-18. During the operation phase, CSR activities will be carried out as per the Companies Act. Out of the total plant area of 198.32 acres, 65 acres is earmarked for green belt development, of which plantation has been done in 19 acres and the balance 46 acres will be developed with green belt within the construction period i.e. 2015-18. About 33,660 plantations will be done as per the guidelines of DFO and WBPCB.

2. *Based on the information and clarifications provided, the Committee noted that the project is in an advance stage of implementation and decided that, in public interest, the request for extension can be agreed only till 31.12.2018 in accordance with the provisions of EIA Notification, 2006.*

There being no agenda item left, the meeting ended with a vote of thanks to the Chair.

भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited



उद्योग क्षेत्र, एकीकृत कार्यालय कॉम्प्लेक्स,
 Industry Sector, Integrated Office Complex,
 लोधी रोड, नई दिल्ली-110 003
 Lodhi Road, New Delhi-110003
 e-mail.: sde@bhel.in: Ph.(दूरभाष)011-41793148

Ref: ID/PPP/PI/348
 Dated: 27.11.2013

Chief Operating Officer
 India Power Corporation Limited
 Plot No X- 1, 2 & 3, Block EP
 Sector – V, Salt Lake City
 Kolkata 700091

Kind attn. Shri Jyotirmay Bhaumik,

Dear Sir,

Sub:- 3X150 MW BTG package for IPC(H)L

This has reference to your email dated 14.11.2013.

We thank you for releasing Rs. 30 Cr towards progress payment on 22.11.2013. As per MOM dated 2.8.2013, we are allocating Rs. 5 Cr (inclusive of Service tax) for Erection-Commissioning and balance Rs.25 Cr for Supply. Please release the balance amount of Rs.23.55 Cr by Jan'2014 as per your e-mail referred above.

As desired in your e-mail referred above, we are lifting the HOLD on the project and advising our units to go ahead with further design, engineering , manufacturing , procurement and dispatch / installation activities.

Regarding other issues in your e-mail we are submitting as below :-

1. IPCL :

Unit will be capable of operation at 157.5 MW on continuous basis.

BHEL:

We confirm that BHEL's BTG units are capable of continuous operation at VVO condition of 157.5 MW at higher power factor, as confirmed vide MOM dated 11.10.2013 (**Annexure-A**).

2. IPCL :

Boiler will be capable of firing 100% Indonesian, 100% South African, 100% Indian coal independently as per final coal analysis provided to BHEL on 16.10.2013, without any additional financial implication.

BHEL:

We confirm that the boiler is capable to fire independently each of the fuel i.e. 100% Indian coal, 100% Indonesian coal & 100% South African coal, subject to our designer's recommendation (**Annexure-B**). The Guarantee point shall remain 150MW.

Regd. Office : BHEL House, Siri Fort, New Delhi-110049

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3. IPCL :
6% PVC for supply which is payable in three installments, shall also be paid through LC in March'14, Sep'14 & March'15.

BHEL :

We confirm your proposal to pay the PVC in three installments. The value of the installments shall be corresponding to the PVC for unit #1, 2, 3 respectively as per the Order. Calculations enclosed at **Annexure-C**. The LCs shall be opened three months prior to the schedule date of payment.

4. IPCL :
Custom Duty implication may be added in the contract price.

BHEL:

As per the Order, the CIF content in BHEL price is Rs.230 Cr. The net import duty is Rs.27.13 Cr. as per the calculations given in **Annexure-D**, w to the contract which shall be added to basic contract price for Supply ie. Rs. 916 Cr + Rs.27.13 Cr = Rs. 943.13 Cr.

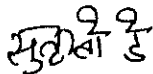
5. IPCL :
We shall be opening another LC for Rs. 100 Cr for ensuring release of materials lying in your inventory, not later than 10 days from date of releasing 30 Cr payment to BHEL.

BHEL :

We are enclosing a Draft of the At-Sight LC (**Annexure-E**) for Rs. 100 Cr that IPCL has confirmed, shall be opened, within 10 days of this letter, so that we can dispatch material held in our inventory.

Since, the other LC to cover further dispatches has to be opened by IPCL by end Dec'2013, please inform us the format of the LC in the next 4-5 days.

Thanking you,



(Sutripto De)

Dy. General Manager (CPP-PI)

Regd. Office : BHEL House, Siri Fort, New Delhi-110049

ANNEXURE - A

BHEL, TIRUCHIRAPPALLI	MINUTES MEETING	OF	MEETING DATE: 11-10-2013
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Customer No.: 0178, 0179& 0180	Client: IPC(H)L - Haldia	Project: IPC(H)L - Haldia	Venue: BHEL, Tiruchirappalli
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Subject: Project Meeting for 3x150MW TPP Boilers

MEMBERS PRESENT

Sl. No.	M/s IPC(H)L - Haldia	M/s BHEL
1	Mr. D. P. Sarawgi, Executive Director	Mr. Sutripto De, DGM/Industry Sector, New Delhi
2	Mr. J. Bhaumik, Chief Executive Officer	Mr. Thanakodi, AGM/Commercial/PCPS
		Mr. Selvakumaran, AGM/Commercial/PCPS
		Mr. P. Selvaraj, AGM/BPP
		Mr. M. Chidambaram, SM/Layouts
		Mr. S. Murugan, Mgr/BPP
		Mr. B. Kiran Kumar, Sr. Engr/BPP
		Ms. Mythili, SM/C&I
		Mr. Kanagaraj, SM/C&I
		Dr. N. Durairaj, DGM/PCPS

1. Boiler Design to suit various fuels:

BHEL requested detailed coal analysis ("As received basis" with exact values) for indigenous coal and imported coal being contemplated to be used by IPC(H)L in BHEL format to study the usability of the same in already contracted / designed boiler. On receipt of above sought report, BHEL will indicate the possibility of firing 100% indigenous or 100% imported coal independently in Haldia boiler also, with list of modifications required, if any, within 7 to 10 days.

As regards to blending of imported coal and indigenous coal, BHEL informed that they do not recommend any blending of imported coal with indigenous coal beyond 30%. To a specific query by customer, BHEL also informed that 50:50% blending is not recommended, however, the feasibility of the same can be examined during field trial runs by increasing in steps of 5% of imported coal at that point of time. BHEL also informed that appropriate method of blending may be adopted by IPC(H)L - Haldia.

To a specific query by customer, BHEL is not recommending to fire washery rejects in these boilers in any proportion.

2. Possibility for VVO operation:

IPC(H)L informed that BHEL Hyderabad agreed for operating the 150MW steam turbine at 157.5MW (VVO) continuously and asked BHEL Trichy to match the requirement of steam for getting 157.5MW.

BHEL confirmed that Haldia boilers are capable of continuous operation for VVO condition of 484 STELL.

BHEL informed that SG guarantee can be given for TMCR steam flow of 456 TPH as agreed in the contract for the design coal as per the contract.

3. General Points:

a) Low NOx and SOx burner:

BHEL supplied burners are of low Nox only. SOx cannot be controlled in burners.

b) Na₂O and K₂O composition in Ash for ESP design consideration:

ESP performance depends mainly on SiO₂, Al₂O₃, CaO etc. in coal ash. Presence of Na₂O + K₂O in Indian Coal is about 1% and although the same is considered in ESP design, any slight variation in this value will not have any influence over ESP performance appreciably.

c) VRB at Burner: BHEL is offering Tilting tangential type firing system. Hence, VRB at burner is not applicable.

d) Number of Mills: No. of mills offered is based on Worst coal with one mill as stand-by. It is sufficient to meet the requirement of even 157.5MW.

e) LOI Analyser: BHEL does not have experience with LOI analyser. Hence, the same is not envisaged.

4. List of manufactured items at Trichy and Ranipet:

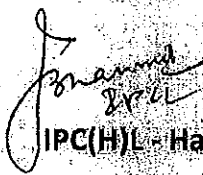
List provided by BHEL Trichy.

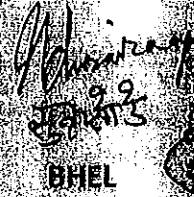
5. List of Raw material and WIP at Trichy and Ranipet:

Critical raw materials for drum, headers and line and links are available for this project. Other items are ~~also identified~~ also identified for this project in the works as well as with vendors.

6. Any optimization possible -- like deleting the requirement of special painting etc.:

Looking in to the site location, BHEL Trichy insisted for retaining the special painting requirement for ensuring protection against corrosion due to Refinery and coastal environment.


IPC(H/L) - Haldia


BHEL

BHEL's recommendation on imported coal firing at IPC(H)L Haldia 3x150MW:

Haldia boiler is designed for 100% indian coal (HHV -3500 kcal/kg) as per contract. Contract design coal is attached as Annexure-I. As per MOM dt 11.10.13, customer furnished two imported coal analysis (Indonesian coal & South African coal) vide email dt 17.10.13, to check the feasibility of firing 100% imported coals independently in already designed Haldia boiler and also about blending with contract design Indian coal. The imported coal analysis of Indonesian and South African coal is attached as Annexure-II.

As mentioned during the meeting and in MOM, all SG guarantees finalized for this contract is for the design coal (Refer Annexure-1). Moreover, it is suggested that imported coals either independently or by blend may be fired after completion of PG Test with contracted indigenous coal.

The following are BHEL's recommendation for imported coal firing:

a) Firing of 100% Indonesian coal:

Haldia boiler is capable of generating BMCR with 100% Indonesian coal. However, the following are the implications / possible effects while firing 100% Indonesian coal on Haldia boilers.

- i) FG Velocity across pressure parts will be slightly higher as the FG quantity generated by this coal will be higher.
- ii) Mills are to be operated with lesser MOT (around 60 ° C) as moisture and volatile matter are on higher side.
- iii) Number of Mills required to generate BMCR & TMCR are 4 numbers, with one mill stand by.
- iv) AH exit gas temperature will be around 125 °C.

b) Firing of 100% South Africa coal:

Haldia boiler is capable of generating BMCR with 100% South Africa coal. However, the following are the implications / possible effects while firing 100% South African coal on Haldia boilers.

- i) Reheater temperature of 540 ° C shall be achieved at BMCR. At TMCR there will be shortfall of 3 - 5 °C in RH outlet temperature with rated excess air of 20% with +30 ° tilt. However, the RH outlet temperature of 540 °C can be achieved by marginal increase in excess air.
- ii) FG Velocity across pressure parts will be slightly higher as the FG quantity generated by this coal will be higher.
- iii) Number of Mills required to generate BMCR & TMCR are 4 & 3 numbers respectively.
- iv) AH Exit gas temperature will be around 140°C.

c) Blending of Imported coal to Indian coal (Haldia boiler contract design coal):

As informed during meeting at Trichy, MOM dt 11.10.13, BHEL do not recommend any blending of imported coal with indian coal beyond 30%. However, the feasibility of 50-50% blending can be attempted at site by field trials by increasing the blending ratio in step of 5%. An appropriate method of blending may be adopted by IPC(H)L- Haldia.



FUEL ANALYSIS - COAL

DESCRIPTION (Source / Type)	UNIT	Design Coal *	Worst Coal	Best Coal	Range of Coal
PROXIMATE ANALYSIS (as recd basis)					
Fixed carbon	%	28.0	21.0		
Volatile matter	%	20.0	19.0		
Moisture (Total)	%	12.0	15.0		
Ash	%	40.0	45.0		
Total	%	100	100		
HHV	kcal / kg	3500	3000		
LHV	kcal / kg				
Ash	kg / 10 ⁶ kcal				
ULTIMATE ANALYSIS (as recd basis)					
Carbon	%	36.70	30.80		
Hydrogen	%	2.50	2.25		
Sulphur	%	0.50	0.60		
Nitrogen	%	0.70	0.60		
Oxygen (difference)	%	7.60	5.75		
Moisture	%	12.00	15.00		
Ash	%	40.00	45.00		
Carbonates	%	-	-		
Phosphorous	%	-	-		
HARD GROVE INDEX					
IT - Initial deformation temp.	°C	55	52		
ST - Softening temp. H = W	°C	1100	1100		
HT - Hemispherical temp. H = W / 2	°C	1300	1290		
FT - Fusion temp. Flow Temperature	°C	1400	1400		
ASH CONSTITUENTS					
A - Si O ₂	%	58.8	61.3		
A - Al ₂ O ₃	%	25.4	28.0		
B - Fe ₂ O ₃	%	7.2	6.0		
B - CaO	%	0.83	0.50		
B - MgO	%	0.56	0.40		
B - Na ₂ O + K ₂ O	%	1.32	0.80		
A - TiO ₂	%	1.2	1.0		
P ₂ O ₅	%	2.5	1.5		
SO ₂	%	-	-		
Base / Acid Ratio		0.115	0.085		
Fe ₂ O ₃ / CaO Ratio		6.67	12.0		
* Efficiency Guarantee Coal					

Sheet 1 of 2

Customer / Plant : BFIL, HALDIA TPP - 3x150MW								
Cont. No. : 0178 - 0188	Rev. 00		Rev. 01		Rev. 02		Rev. 03	
	Sign	Date	Sign	Date	Sign	Date	Sign	Date
Engineer : KKB	<i>[Signature]</i>	10.11.10						
Reviewer : SAMPOR	<i>[Signature]</i>	10.11.10						
Approver : PSV/SCS	<i>[Signature]</i>	10.11.10						

~~ANNEXURE 2~~ ✓

			Indonesian coal	South african
Proximate Analysis (ARB)	ARB	Kcal/Kg	4400	5000
Moisture	ARB	%	32	3
Volatile matter	ARB	%	0.8	0.8
Ash content	ARB	%	7	30
Fixed Carbon	ARB	%	32.85	24
Heating Value	ARB		28.15	43
Size 0-50 mm	ARB	%	50	56
			90 min	100%
Ultimate Analysis (ARB)				
Carbon	ARB	%	33.77	50
Hydrogen	ARB	%	5.18	3.05
Nitrogen	ARB	%	0.85	1.36
Sulphur	ARB	%	0.8	0.8
Oxygen	ARB	%	20.4	11.79
Asn content	ARB	%	7	30
Moisture content	ARB	%	32	3
			100	100
Ash Fusion Temperature (Reducing Atmosphere)				
Initial Deformation Temperature	ASTMD 1857-04	Deg C	1200	1202.6
Softening Temp.	ASTMD 1857-05	Deg C	1250	1306.1
Hemispherical Temp.	ASTMD 1857-06	Deg C	1280	1381.6
Fluid Temp./Fusion Temp.	ASTMD 1857-07	Deg C	1300	1485.5
Ash Analysis				
Iron as Fe2O3		%	14.9	16.76
Silica as SiO2		%	40.55	66.03
Aluminium as Al2O3		%	27.35	5.88
Magnesium as MgO		%	3.1	1.98
Calcium as CaO		%	6.39	4.89
Sodium as Na2O		%	0.41	0.31
Potassium as K2O		%	0.51	0.35
Phosphorus as P2O5		%	0.55	0.16
Sulphur as SO3		%	5.4	2.12
TiO2		%	1.48	0.12
Base/Acid Ratio				0.34
Fe2O3 / CaO Ratio			2.33	3.43
Chloride (Air Dried)				0.05



16/10/2000

ANNEXURE-C

PVC – Supply

Contract price (Ex. Works supply) = 916 Cr.

CIF content in Ex. Works supply price= 230 Cr.

Price variation due to variation in material and labour indices = 227.47 Cr.

Price variation due to variation in exchange rates = 75.86 Cr.

Total Price variation in Supply contract = 303.33 Cr. (33.12% increase)

Ceiling on PVC 6% = 54.96 Cr.(A)

+ ED & CST as applicable in March'14, Sep'14 & March'15.

Amount payable for Unit #1 in March'14 =40% of (A) =Rs.25.196 Cr. + Taxes & duties as applicable

Amount payable for Unit #2 in Sep'14 =30% of (A) = Rs.18.897 Cr. + Taxes & duties as applicable

Amount payable for Unit #3 in March'15 =30% of (A) =Rs. 18.897 Cr. + Taxes & duties as applicable

- For detailed calculations see trailing sheets

Formula used for calculating PVC (as per LOA)

$$DP = PO \times (0.15 + 0.30 L1 / LO + 0.55 I1/I0) - PO + CIF \times (0.5 US\$1/US\$0 + 0.5 EU1/EU0) - CIF$$

$$PO = 916$$

$$CIF = 230$$

$$LO = 170(\text{CPI for Industrial Workers - feb-2010})$$

$$I0 = 131.9(\text{Index taken as "Basic metals, Alloys and metal Products" , Feb-2010})$$

$$US\$0 = 46.23(\text{RBI reference rate on 26-2-2010})$$

$$EU0 = 62.81(\text{RBI reference rate on 26-2-2010})$$

$$L1 = 237(\text{Sep'2013 Index is 237. same value taken for Oct'13})$$

$$I1 = 163.1(\text{June (162.5) July (162.2), Aug (162.7), Sep (163.1)})$$

Hence, extrapolated for Oct'13 - same as Oct'13

$$US\$1 = 61.276(\text{RBI reference rate on 18-10-2013})$$

$$EU1 = 83.801(\text{RBI reference rate on 18-10-2013})$$

$$DP = 227.47(\text{Price variation due to variation in material and labour indices})$$

$$= 75.86(\text{Price variation due to variation in exchange rates})$$

$$\text{TOTAL} = 303.33(\text{Total Price variation in Supply contract})(33.12\% \text{ increase})$$

$$\text{Ceiling } 6\% = 54.96$$

PVC – Erection & Commissioning

$$DP = PO \times (0.15 + 0.85 L1 / LO) - PO$$

$$PO = 128$$

$$LO = 170(\text{CPI for Industrial Workers - Feb-2010})$$

$$L1 = 237(\text{Sep'2013 Index is 237. same value taken for Oct'13})$$

$$DP = 42.88(\text{Price variation due to variation in labour indices}) (33.50\% \text{ increase})$$

$$\text{Ceiling } 6\% = 7.68$$

$$\text{TOTAL PVC SUPPLY+E\&C} = 54.96 + 7.68 = 62.64$$

UNIT WISE CIF & CD BREAK UP

Sl. No.	Unit	Rate of CD	CIF allocation (in Cr.)	CD (in Cr.)
1	Trichy	10.64%	71.22	7.58
2	Trichy-Valves	10.64%	1.58	0.17
3	BAP- Ranipet	10.64%	25.02	2.66
4	PC- Chennai	10.70%	25.42	2.70
5	CBU- Bangalore	10.64%	0.53	0.06
6	Bhopal-Motors	8.12%	3.15	0.25
7	Bhopal-STS	5%	0.5	0.025
8	Hyderabad-Mills	8.12%	9.71	1.46
9	Hyderabad	8.12%	79.92	6.44
10	EDN-Banglore	7.50%	9.8	5.52
11	PEM-Noida	8.06%	3.15	0.25
	TOTAL		230	27.115

ISSUE OF INLAND DOCUMENTARY CREDIT

1. LETTER NO. :
2. AMOUNT OF LC : Supply: Rs.100,00,00,000.00
(Rupees One Hundred Crore Lakhs Only)
3. MODE OF L/C : At-sight, Divisible, Confirmed, Irrevocable
4. CONTRACT REFERENCE :a) Supply
LOA No: BFIL/BHEL-LOA/03, Dated: 29.09.2010
LOA No: IPC(H)/BFIL/001/016, Dated: 29.09.2010
5. VARIATION : NIL
6. %INVOICE COVERED : Supply –
60% of contract price + 100% taxes & duties of supply price on submission of dispatch documents through "LC at sight"

Receipt of equipment -
15% of the contract price on submission of specified documents through at site LC.
7. INVOICING : Invoice towards supply of equipment
8. L/C VALID FOR SHIPMENT : 30-2-2014
L/C VALID FOR NEGOTIATION : 30-3-2014
9. APPLICANT NAME & FULL ADDRESS : India Power Corporation (Haldia) Ltd.
DPSC House, 1,2&3 EP-Block
Sector-V, Salt Lake City,
Kolkata - 700091
Tel: 91-33-23574308 to 10
10. BENEFICIARY NAME & FULL ADDRESS : M/S. Bharat Heavy Electricals Ltd.
Industry Sector, Lodhi Road, New Delhi-110003.
11. ADVISING BANK NAME & FULL ADDRESS : Canara Bank,
Prime Corporate Branch-II
World Trade Tower, Barakhamba Lane,
New Delhi
RTGS. No: CNRB0001942
A/C.NO: 0307201003847
12. NEGOTIATION BANK NAME & ADDRESS : Canara Bank,
Prime Corporate Branch-II
World Trade Tower, Barakhamba Lane,
New Delhi
RTGS.No: CNRB0001942
A/C.NO: 0307201003847

13. DRAFT TO BE DRAWN ON : Negotiating bank
14. DESCRIPTION OF GOODS : BTG Package for 3 x 150MW Coal based Captive TPP at IPC(H)L, Haldia
15. DOCUMENTS REQUIRED : As per the details below:
(To be specific, no cross required documents)
16. PARTIAL SHIPMENT : permitted
17. TRANSHIPMENT : Not permitted
18. SHIPMENT : Through beneficiary's registered transporters
19. USANCE PERIOD : Nil -At Sight
20. CHARGES : All Bank Charges, of opening Bank, advising bank & Negotiating Bank, including confirmation charges, negotiating charges and interest, if any shall be to the account of Applicant.

DOCUMENTS REQUIRED:

Supply

A. Supply of equipment

- a) Commercial Invoices
- b) Consigner copy of GR/RR
- c) Photo copy of Excise invoice/ VAT invoice.
- d) Inspection certificate of BHEL/BFIL
- e) Material dispatch clearance certificate (MDCC) for customer hold point items as per QAP issued by owner of his representative.

B. Receipt of equipment

- a) Invoice
- b) Material receipt certificate and copy of Day Book (DB) of handling over Supplier's Excise Invoice (Typical format of DB and MRC are attached).

ADDITIONAL CONDITIONS:-

- A. INVOICES AND ALL OTHER DOCUMENTS TO QUOTE L/C AND DATE & LOI NO. AND DATE.
- B. The Invoice will be BFIL invoice drawn on IPC(H)L



কলকাতা পোর্ট ট্রাস্ট
KOLKATA PORT TRUST
হালদিয়া গোদী পরিসর
HALDIA DOCK COMPLEX
প্রশাসনিক প্রभाग
Administration Division



জাহাঙ্গীর টাওয়ার, হালদিয়া-721 607
দুর্যোগ নং: (03224) 263171
ফ্যাক্স নং: (03224) 263152
জিলা- পূর্ব মেদিনীপুর

Jawahar Tower, Haldia- 721 607
Phone No. (03224) 263171
Fax No. (03224) 263152
Dist. Purba Medinipur

No : Ad/E/1241/1pCL/7066

October 19, 2015

✓ M/s. India Power Corporation (Haldia) Ltd.,
Plot No. X 1, 2 & 3,
Block-EP,
Sector-V,
Salt Lake City,
Kolkata- 700 091

**Sub : Utilization of HDC Mechanized Facilities for handling and
bringing of import Coastal Export & Domestic Coal**

Dear Sir,

This has reference to your letter no. IPC(H)/HDC/Operation-120 dated 13.10.2015 on the above subject.

We would like to confirm you that KoPT would provide the facilities and services to India Power Corporation (Haldia) Ltd. for handling their cargo at HDC to / from the ships and railway wagons at its available berths (for ship face handling) and wagon tippers (for unloading of coal) as per the procedure / rules of HDC, KoPT in vogue.

KoPT would also allot storage area for stacking of cargo inside the dock following the provisions of its prevailing Rent Schedule approved by TAMP and Land Policy Guidelines approved by the Central Govt. IPCL may also use the road weighbridges of KoPT inside the dock as per the procedure / rules of HDC, KoPT in vogue.

Yours faithfully,

(A. K. Dutta)

General Manager (M&S)
Haldia Dock Complex

HEADS OF AGREEMENT FOR Fuel Supply

This Heads of Agreement is executed on this 28th day of December, 2015 (the "HOA")

BETWEEN

GMR COAL RESOURCES PTE LTD., (or any associate company of GMR Group) a company incorporated under the laws of the Republic of Singapore and having its registered office at 33A CHANDER ROAD, SINGAPORE 219539] (hereinafter referred to as "**GCRPL**" or "**Supplier**", which expression shall mean and include its successors and permitted assigns) of the FIRST PART;


AND

INDIA POWER CORPRATION (Haldia) LIMITED incorporated and existing in accordance with the provisions of the Companies Act, 2013 and having its registered office at Plot X1-2 and 3, block EP, Sector V, Salt Lake city, Kolkata -700091 (hereinafter referred to as "**IPCHL**" or "**Purchaser**", which expression shall mean and include its successor and permitted assigns) of the SECOND PART.

Each of GCRPL and IPCHL are individually referred to as the "Party" and collectively the "Parties".

WHEREAS :

- A. GCRPL is *inter alia* engaged in the business of mining and trading of coal and for the said purpose procures coal from various suppliers and mining permit holders of coal located in various parts of the world including Indonesia. GCRPL hold around 28.5% equity in PT Golden Energy Mines Tbk (Hereinafter referred to as "Mines") located at South Kalimantan, Indonesia and has right of offtake up to 10 MTPA of coal from the coal mines owned by PT Golden Energy Mines Tbk
- B. IPCHL is engaged in the business of generation of electricity power and is developing a thermal power plant of 3 x 150 MW capacity at Haldia, West Bengal, India (the "Power Plant").



- C. To meet the fuel requirement for the said Power Plant, IPCHL approached GCRPL and GCRPL has agreed to supply Indonesian imported coal from Mines to IPCHL.
- D. Each of the Parties have decided to enter into this HOA to record the broad understanding between the Parties for the supply of imported coal.

IT IS HEREBY AGREED AS FOLLOWS :

1. Purpose

- 1.1 GCRPL shall ensure availability of coal to be supplied to IPCHL and IPCHL shall take such steps as may be required for taking delivery of the coal on the terms broadly stipulated in Schedule-I hereto.
- 1.2 Each of the Parties covenant and agree that this HOA provides the broad terms and conditions for the supply of coal by GCRPL to IPCHL for meeting the fuel requirement of the Power Plant. Each of the Parties undertake to enter into further negotiations for finalizing the detailed terms and conditions including commercial terms for the supply of imported coal and its shipments upto Haldia port by GCRPL for delivery to IPCHL. Each of the Parties further undertake to execute such documents as may be required to give effect to such terms and conditions as and when agreed.

2. Price and Specification

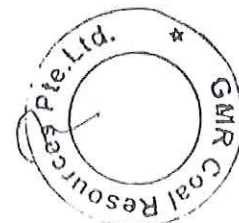
The price along with other specifications such as quantity, quality, etc of the coal to be supplied by GCRPL to IPCHL is provided in Schedule – I hereto'.

3. Shipment

The coal shall be supplied on CIF basis. IPCHL shall ensure that timelines for shipment and establishing the Letter of Credit for shipment of coal, as provided in Schedule-I hereto are strictly adhered to.

4. Conditions Precedent

- 4.1 The IPCHL on or before 10th May, 2016 or any such extended date as may be extended by GCRPL in its sole discretion fulfillment following Conditions:



- 4.1.1 Obtain all required approvals and consent from the Lenders to the Power Plant at Haldia.
- 4.1.2 Achieve the commissioning of its power plant at Haldia.
- 4.1.3 Obtain the desired consents, approvals & clearances from various government authorities (including environmental & pollution clearances) required for its power plant with regard to :-
 - a) use of imported coal
 - b) Commissioning and operation of the its power plant

In the event IPCHL fails to fulfill the aforesaid Condition Precedent on or before the timelines mentioned herein after above then GCRPL may, at its sole discretion and without any liability to it, by written notice to IPCHL communicate its refusal to supply the coal as contemplated herein this HOA. Upon issuance of the said notice to IPCHL any agreement for the said transaction shall stand terminated with immediately effect.

It is understood that initial firing of the boilers shall take place domestic coal. Initial coal requirement for commissioning and for performance guarantee etc shall be met with domestic coal /spot purchases from GCRPL.

5. Term

Unless extended or terminated earlier pursuant to its provisions, the transaction contemplated herein shall be effective as of the Effective Date and remain in full force and effect for a period of fifteen (15) years. Either Party may not later than one (1) year before the end of such fifteen (15) years period, request for extension and such extension shall, subject to such terms and conditions as may be mutually agreed between the Parties, be for an additional period of five (5) years. It shall be open to the Parties to agree to a further extension by another five (5) years on such terms and conditions as may be agreed between the Parties provided that either Party communicates its intention for extension to the other Party at least one (1) year before the end of such additional period.

6. First Delivery Date



The Parties agree to take such steps as may be required to ensure that the first consignment of coal shall be delivered, at the latest, during the month of July 2016. IPCHL shall issue a notice to GCRPL specifying the exact date of the first delivery (the "First Delivery Date").

6.1.1 The Parties agree that the First Delivery Date will be, at the latest, during the month of July 2016.

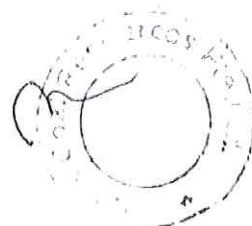
6.1.2 The Purchaser shall issue a notice (the "First Delivery Request") to the Supplier specifying the exact date of the first delivery (the "First Delivery Date") according to Schedule 1.

If the Supplier has not received from the Purchaser a First Delivery Request prior the 10th of May 2016, the Parties shall discuss in good faith and do their reasonable efforts to conclude an amendment to the relevant provisions of the Fuel Supply Agreement (Hereinafter referred as "FSA") accordingly and subject to the receipt of acceptable firm offer(s) by the Supplier for the supply of Coal. If the Parties have not reached an agreement on the amendments on FSA within 1 month beyond 10th May, 2016, the Supplier shall be entitled to terminate this FSA.

7. Confirmation

Each of the Parties agree and acknowledge that the terms enumerated herein this HOA records the broad understanding between the Parties with respect to the supply of coal by GCRPL to IPCHL. Pursuant to execution of this HOA the Parties shall negotiate and finalise the detailed terms and conditions which shall govern the supply of coal by GCRPL. Notwithstanding anything stated herein this HOA IPCHL agrees and assures GCRPL that the commitment for supply of coal shall become effective only upon finalization of the detailed terms and conditions and execution of the agreement/document incorporating the same. Each of the Parties thus agree, undertake and assure each other to execute such documents/agreements as may be required incorporating the detailed terms and conditions agreed between the parties with respect to the transaction contemplated herein. IPHCL on its part assures and undertakes to satisfactorily complete the conditions precedent enumerated in this HOA and such other conditions as may be agreed between the Parties and incorporated in the agreement/documents to be executed pursuant to discussions between the Parties.

8. Confidentiality



Each of the Parties agree and undertake that the existence of and terms of this HOA are strictly confidential and any information received by it in connection with this HOA are confidential and shall not be disclosed to any third party (ies) without the prior written consent of the other Party. Each parties may disclose this HOA to governmental authorities and lenders to the extent required for obtaining any clearances, approvals or consents related to power plant or the FSA.

However, it is clarified that GCRPL shall be entitled to disclose the terms of this HOA to the coal mining permit holder or coal supplier with whom it intends to execute the Coal Off-take Agreement or similar agreements for the procurement of coal to be supplied to IPCHL in accordance with the terms of this HOA or the FSA (as and when executed).

9. Governing Law and Jurisdiction

This HOA shall be governed by the laws of the Republic of Singapore and the courts in Singapore shall have exclusive jurisdiction to adjudicate upon any disputes between the Parties arising out of or in relation to this HOA.

10. Dispute Resolution

Any dispute arising out of or in connection with this HOA shall be referred to and finally resolved by arbitration by a Sole Arbitrator to be jointly appointed by both the Parties. The arbitration shall be conducted in accordance with the Arbitration Rules of the Singapore International Arbitration Centre SIAC Rules, 2013 (the "Rules") which Rules are deemed to have been incorporated by reference to this Clause. The seat of arbitration shall be Singapore. The language to be used in the arbitration shall be English.

11. No Liability

Notwithstanding anything contained in this HOA, in no event shall Supplier or Purchaser be liable for any indirect, incidental, special or consequential damages whatsoever (including but not limited to loss of profits or interruption of business, non-signing/failure to sign FSA, refusal to off take coal, stoppage or delay in operation or commissioning of the power plant) arising out of or related to this HOA.



In the circumstances, the Purchaser assigns the rights and obligations under this HOA to any third party, the Supplier shall not be liable to such third party under this HOA for any claims or demands whatsoever

12. Miscellaneous

12.1 Purchaser shall not assign this or any part of this HOA or any benefit or interest in or under this HOA without the prior written consent of the Supplier. However, each Party may with prior intimation to other Party assign, declare any trust of or otherwise transfer the whole or any part of this HOA and any benefit, interest, right or cause of action arising under this HOA to the lenders, without the consent of the other Party.

12.2 Each Party shall bear its own cost in relation to the preparation and the execution of this HOA.

12.3 No purported variation or amendment of this HOA shall be effective unless made in writing by all the Parties.

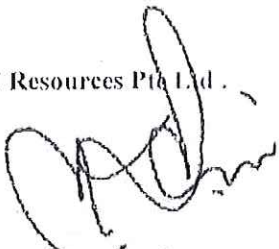
12.4 Nothing in this HOA shall create a partnership or establish a relationship of principal and agent or any other fiduciary relationship between or among any of the Parties.

GMR Coal Resources Pvt Ltd .

By:

Name:

Title:



Nishu Kesh Singh
Manager

India Power Corporation (Haldia) Ltd

By:

Name:

Title:


SURYA PRAKASH KANSAL
COO - Coal



SCHEDULE - I

QUANTITY, SCHEDULE AND SPECIFICATIONS OF COAL TO BE SUPPLIED

1. Quantity & Schedule :

<u>Annual Contracted Quantities</u>											
Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
2016	2017	2018	2019	2020	2021	2022	2023	2024			
± 15%	± 15%	± 15%	± 15%	± 15%	± 15%	± 15%	± 15%	± 15%			
728000 t	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt
Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
2025		2029	2030	2031	2032						
± 15%	to	± 15%	± 15%	± 15%	± 15%						
1.74 Mt		1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt	1.74 Mt



(Handwritten signature)

2. Specifications :

Parameters	Units	Typical	Rejection
Total Moisture (arb)	% by weight	36	39
Volatile Matter (adb)	% by weight	42	
Total Ash (arb)	% by weight	7	20
Total Sulphur (adb)	% by weight	0.3	0.64
GCV (arb)	Kcal/kg	4,200	4000
HGI	deg H	65	
Sizing (0-50 mm)	%	80 %	
AFT Red. Atm.	deg C	1150	
Initial Deformation			



3. Price :

- The pricing would be mutually agreed for each quarter by the end of first month of the previous quarter and shall be subject to applicable laws in Indonesia
- The pricing would indicated FOB and freight separately giving the Purchaser an option to buy on FOB or CIF Haldia basis or basis any designated port in India

4. Loading Port : Any port in Indonesia

5. Discharge port : Haldia, West Bengal, India or any designated port in India

6. Discharge Rate : 6000 ton PWWD SHINC or as per any designated port in India.

7. Payment terms : 100% through Letter of Credit through reputed International Bank acceptable to Supplier

8. Quality : Sampling, Analysis and Weight Determination:

Quality at the load port shall be determined by Independent Inspection Agency, Indonesia, appointed by Supplier. The load port report shall be basis for 100% payment purpose. The cost of Independent Inspection Agency to the account of Supplier.

9. Premium/Penalty : Gross Calorific Value, ARB: If the Gross Calorific value, as received is above or below the basis (Basis GAR), the price shall be adjusted as below:

$$\text{Adjusted Price} = \text{CIF price} \times \frac{\text{Actual GCY (ARB)}}{4200 \text{ GAR}}$$

10. Shipping Term :

1. NOR to be tendered ATDN SHINC
2. T+12 Hours USC

3. Pre Berthing Delays at discharge port to Purchaser account.

GMR Coal Resources Pte Ltd ,

By:

Name: Mithilesh Sinha

Title: Manager

India Power Corporation (Haldia) Ltd

By:

Name: Surya Prakash Kansal

Title: COO- Coal

