THE DURGAPUR PROJECTS LIMITED

An ISO 9001 : 2000 Certified Company
(A Government of West Bengal Enterprise)
Regd. Office- Administrative Building, Durgapur – 713 201.
Tele Fax.- 91 343 255 6786, 255 6251.

No.DPL/PC/2962 Dated: 10.9.08

To
The Chief Engineer (TRM)
Thermal Renovation Modernization Division,
Central Electricity Authority,
Sewa Bhawan, R.K. Puram, New Delhi – 110 066,
FAX NO: 011 – 26186904 **Attn: Mr. A. K. Gupta**

Sub: Operational performance & design details in regard to boilers sourced from Chinese manufacturers.

Dear Sir,

With reference to your letter no. CEA/TETD-MP/07/31/572 dt. 7.8.2008, we are enclosing the details of operational performance of our 300 MW Unit-7. In this context, we would like to highlight the following points:

1. The problems / constraints as stated in the enclosed report against achieving rated load on sustained basis are mainly teething problems. Most of the problems have already been solved. No major equipment problem occurred.
2. The layout of unloading bays, maintenance bays, roads through main plant area is well designed.
3. Major causes of unit trippings already occurred have been stated in the enclosed list. At present, these types of problems are not occurring frequently.
4. Since last one month, it is observed that DEC is gradually reducing secondary fuel oil consumption. We are constantly interacting with DEC to reduce oil consumption as far as possible.
5. In addition to the above, we would like to draw your attention regarding some special construction / erection features as mentioned below:
   - ❖ Total chimney and few other RCC jobs carried out by concrete pump by engaging Chinese Contractors in record time.
   - ❖ Fabricated steel structures were directly imported from China in fabricated form.
   - ❖ All Main structures are bolted type. No misalignment found during erection. Special type of bolts & special devices used for tightening for quick erection.
   - ❖ Tubular structure have been used in Switch Yard.
   - ❖ Natural Draft Cooling Tower constructed by Tower Crane.
   - ❖ Efficient & having adequate design capacity Dry Bottom Ash system of M/s Magaldi Power, Italy is performing well.

However, presently the unit is running on sustained basis. The problems are being sorted out gradually and we hope the unit would perform very effectively in future.

Thanking you,

Yours faithfully,
10/9/08
(A.K. Chakraborty)
General Manager (Power Plant) &
Project Manager, 7th Unit.

Encl: As above.

(1)

SUB: Operational performance & design details in regard to boilers sourced from Chinese manufacturers. (Ref: CEA's letter no. CEA/TETD-MP/07/31/572 dt. 7.8.08)

1. Range of coal quality specified – Performance coal and worst coal (Proximate Analysis)

DESCRIPTION	DESIGN COAL	RANGE OF COAL	WORST COAL
Moisture Total	8%	5 – 10%	10%
V.M. (As received)	20%	15 – 25%	15%
Ash (As received)	40%	25 – 45%	45%
F.C. (As received)	32%	By Difference	By Difference
Carbon(As received)	42%		
Hydrogen (As received)	3%		
Nitrogen (As received)	0.9%		
Sulphur (As received)	0.6%		
Oxygen (As received)	5.8%		
Gross C.V. Kcal/Kg	4000	3500 – 5500	3500
HGI	48	55 - 70	

Boiler MCR should be achievable with the design coal as well as the range of coal analysis tabulated above. Performance will be based on design coal.

2. Coal Quality as actually received (Proximate Analysis)

Proximate analysis report of average crushed coal actually received from 3.5.08 to 31.7.08 is enclosed.

3. Performance Feedback

b. Problems/constraints faced in achieving rated load on sustained basis.

Following problems are being faced in achieving rated load on sustained basis:

- Problems in hydraulic system of Mills.
- Malfunctioning of different dampers & their drives.
- Miscellaneous C & I problems.

c. Constraints in operation and maintenance due to layout or any other reason.

Due to layout there is no constraint in operation & maintenance.

d. Major causes of unit trippings experienced.

After COD, the major causes of unit tripping experienced are given below in brief:

- Due to problems in hydraulic system of Mills.
- Water wall tube leakage
- Due to lightning surge
- Due to leakage observed in EH Governor Oil line in turbine front pedestal and leakage in jacking oil line.
- Impulse line leakage in Feed Water line before Economizer.
- Apart from this, continuous problems are being faced in C&I systems.

e. Incidents of tubes failure (location, number, type of failure etc.)

12.5.08 – Tube leakage on membrane welding area in rear water wall.
13.6.08 – Thermo well uprooted from final superheater spray header inlet temp

point.
21.6.08 – Tube leakage on roof tube nearer to roof inlet header. (Tube no. 46 & 47 from LHS)

f. Any component/equipment failure and reasons thereof.
After COD, LDO pump failure occurred due to damage of drive pinion.

4. Mill performance

a. ***Number of mills in operation at full load.*** – 5 Mills

b. ***Quantity of mill rejects.*** – Minimum

c. ***The coal fineness achieved.*** – Yet to be measured.

d. ***The load upto which oil support is provided and reasons thereof.***
As per DEC's declaration oil support is required upto 120 MW. Initially, secondary fuel oil consumption was slightly high. Since last one month, it is observed that DEC is gradually reducing secondary fuel oil consumption. We are constantly interacting with DEC to reduce oil consumption as far as possible.

5. List of tests/inspections carried out at manufacturer's works with the participation of project engineers.
All the pressure parts components of boiler and power cycle piping have been inspected by Hartford Steam Boiler (HSB) at China. No third party was engaged by us for inspection of other items and the same has been manufactured as per standard practice of DEC.

6. Response to the various issues raised by M/s. DEC in their letter dated 31st March, 2008 regarding poor coal quality (copy enclosed).
Copies of DPL's letter nos. PP/1062 dt. 16.4.08 and DPL/ PC/7th Unit / DEC / 2662 dt. 16.4.08 are enclosed for kind perusal

7. Details of O&M manpower posted at site and their training profile.
DGM – 1, Sr. Manager -1, Addl. Sr. Manager (Oprn) – 1, Manager – 4, Asst. Manager – 1, Graduate Engineer Trainees – 33 (Electronics -8, Mechanical – 12, Electrical – 11, Power – 2).
Each trainee has attended "Power Plant Simulator Training Programme" at Bakreswar, WBPDCL.

8. Any other specific observation about overall performance of the unit.

Essential Information to be furnished:

1. Furnace Details

i) *Furnace Volume* - 9358 cu.m

ii) *Max Net Heat Input per unit plan area* = < 4.652 MW/m^2

iii) *Max Burner zone heat release rate* = < 1.582 MW/m^2

iv) *Max Furnace cooling factor*

v) Residence Time

We are interacting with DEC to get these data. As soon as we get the same, we would intimate you.

vi) *Gas velocity in the furnace*

2. *SH/RH/Economizer Tube pitching details*

Superheater

Primary Superheater = 114 mm

Panel Division Superheater = 61 mm

Platen Superheater = 64 mm (outermost space is 67 mm)

Final Superheater = 102 mm

Reheater

Wall Reheater = 50.8 m

Medium Reheater = 70 mm

Final Reheater = 120 mm

Economizer = 102 mm

3. *Mills*

i) *Total number of mills* - 6 Mills.

ii) No. *of mills normally required with worst coal* – 5 Mills

iii) *No. of mills normally required with Design coal - 4 Mills*

iv) *Material of grinding elements* - Cr2021

v) *Guaranteed life of grinding elements* –
Roller 10,000 hrs; Grinding Rings 6000 hrs; Grinding Race 6000 hrs.

4. *ID/FD/PA fans*

i) *Margin on Flow (%) (Based on 50% BMCR flow)*
PA FAN: 40%
FD FAN: 20%
ID FAN: 20%

ii) *Margin on Head (%) (Based on 50% BMCR flow)*
PA FAN: 40%
FD FAN: 40%
ID FAN: 40%

5. *Electro-static Precipitators*

i) *No. of electric fields in series* – 7 fields

ii) *Specific Collecting Area* – 241.48 $m^2/m^3/sec$

iii) *Treatment time* - 39 secs

iv) *Gas Velocity* - 0.63 m / s

v) *Collecting Electrode spacing*–300mm (1st 5 fields) & 400mm (last 2 fields).

vi) *Particulate Emissions at outlet*
(worst coal, all fields in service) - 50 mg / Nm^3 (This emission level has not yet been achieved. As per DEC, some internal chekings & settings are required to be done by the manufacturer. Representative(s) of manufacturer is yet to reach at site.)

6. *Duct Thickness*

i) *Air ducts* --- 6 mm.

ii) *Gas ducts*

Before ESP --- Plate thickness 8 mm.

After ESP --- Plate thickness 8 mm.

PROXIMATE ANALYSIS OF AVG. CRUSHED COAL OF # 7

Date	% Ash	% VM	% IM	Cal. GCV (Kcal/Kg)	UHV (Kcal/Kg)	GRADE
03.05.08	36.30	25.15	3.89	4573.11	3353.78	F
06.05.08	42.02	22.32	2.02	4306.98	2822.48	F
07.05.08	38.78	25.12	2.05	4615.07	3276.50	F
09.05.08	46.82	21.56	2.04	3852.34	2157.32	G
10.05.08	38.32	25.18	2.58	4573.68	3255.80	F
17.05.08	46.17	23.53	5.44	3418.62	1777.82	G
19.05.08	37.58	25.91	4.10	4396.67	3110.90	F
23.05.08	44.87	23.31	2.65	3947.07	2342.24	G
24.05.08	28.94	27.96	4.52	5174.07	4282.52	D
29.05.08	40.10	23.10	3.00	4270.00	2952.00	F
31.05.08	39.74	23.63	1.86	4560.77	3159.20	F
06.06.08	42.00	20.06	1.90	4300.00	2842.00	F
07.06.08	40.04	23.40	3.20	4321.57	2932.88	F
09.06.08	46.00	19.90	2.20	3850.00	2235.00	G
11.06.08	38.18	25.11	3.80	4407.00	3104.00	F
12.06.08	46.10	20.89	2.45	3868.00	2207.00	G
13.06.08	39.20	23.11	1.59	4662.00	3270.00	F
20.06.08	44.00	22.00	1.70	4189.00	2593.00	F
21.06.08	40.70	21.80	1.80	4504.00	3035.00	F
02.07.08	35.70	26.20	3.20	4730.00	3532.00	E
05.07.08	42.90	22.00	1.80	4283.00	2731.00	F
06.07.08	43.50	21.80	1.60	4257.00	2676.00	F
07.07.08	45.26	21.60	1.60	4091.00	2442.00	F
08.07.08	45.40	21.00	2.80	3875.00	2248.00	G
09.07.08	45.30	20.60	2.30	3958.00	2331.00	G
11.7.08	50.80	15.10	1.40	3671.00	1696.00	G
12.7.08	35.30	27.30	3.00	4797.00	3615.00	E
13.07.08	32.10	27.40	2.50	5171.00	4125.00	E
14.07.08	42.20	21.70	3.50	4075.00	2593.00	F
15.07.08	45.80	20.50	2.10	3940.00	2290.00	G
16.07.08	45.70	18.50	2.00	3964.00	2317.00	G
17.07.08	45.10	20.90	3.70	3773.00	2166.00	G
18.07.08	45.40	18.90	1.90	4069.00	2373.00	G
20.07.08	42.90	21.50	3.00	4082.00	2566.00	F
21.07.08	38.20	22.50	2.00	4669.00	3352.00	F
31.07.08	40.10	22.70	3.10	4330.00	2938.00	F

9/8/08.

OFFICE OF THE GENL.MANAGER(P.P)
DURGAPUR PROJECTS POWER STATION

Ref. : PP/ Dated

To
Mr. Shen Jianrong
Project Manager,
M/s. DONG FANG Electric Corpn. Ltd.,
DPL 7th Unit (1 x 300 MW) Site,
Durgapur-1. FAX : 255-3187

Sub. : Good quality of coal and oil for operation of Unit-7.
Ref. : 1) Your letter No. DEC-DGE-S-TE-1357 dated 14-4-2008.
2) Contract No. DPL/Unit-7/DMP-1(SUPPLY)/2004-05/001.
3) Contract No. DPL/Unit-7/DMP-1(SERVICES)/2004-05/002.

Dear Sir,

Your letter regarding supply of good coal and oil does not make any sense either technically or contractually.

DPL placed an order on M/s. DONG FANG Electric Corporation through International Competitive Bidding for EPC contract of 300 MW unit (Unit-7) of DPL. The contract clearly includes the technical specification of all the equipments including the boiler and the fuel to be used by the boiler. DEC accepted the contract and therefore it is bound to run the boiler and demonstrate full load operation as also the performance parameter based on quality of coal and quality of oil as specified in the contract. We are enclosing herewith a coal analysis report of as fired coal as per contract.

DESCRIPTION	DESIGN COAL	RANGE OF COAL	WORST COAL
Moisture Total	8%	5 – 10%	10%
V.M. (As received)	20%	15 – 25%	15%
Ash (As received)	40%	25 – 45%	45%
F.C. (As received)	32%	By difference	By difference
Carbon (As received)	42 %		
Hydrogen (As received)	3.0%		
Nitrogen (As received)	0.9%		
Sulphur (As received)	0 6%		
Oxygen (As received)	5.8%		
Gross C.V. (K.cal/Kg)	4000	3500 – 5500	3500
HGI	48	55 - 70	

(9)

Note : Boiler MCR should be achievable with the design coal as well as the range of coal analysis tabulated above. Performance will be based on design coal.

By the above, it is clear that the percentage of ash as per design coal is 40% and for worst coal it is 45%. The contract also states that boiler MCR should be achievable with the design coal as well as the range of coal analysis as tabulated above. However, performance will be based on design coal. Similarly, the quality of oil is also specified.

DEC has a right to complain if the quality of coal and oil deviates from the design and worst coal on the wrong side. Joint testing of the as fired coal and oil can be done to establish whether the quality of coal and oil deviates from the design/worst coal or not. Contractually DPL is bound to supply design coal and worst coal. As performance guarantee is not being done now, DEC has to show maximum continuous rating of the boiler with design coal as well as worst coal. Full load operation for 72 hours should be achieved with design / worst coal as per contractual conditions..

Regarding choking of the burners, it may be stated that DEC should develop the habit of getting all the burners cleaned before start-up of the unit. The unit was shut down on 03-4-08 and it is doubtful whether the burners were cleaned thereafter. Only blaming the quality of oil will not solve the problem DPL reiterates that it is supplying oil with required design specification.

Thanking you,

Yours faithfully,
Sd/-

(A. K. Chakraborty)
General Manager (Power Plant)
Durgapur Projects Power Station

Memo No,. PP/1062/1(5) dated : 16/4/08

Copy to :

1. Managing Director/DPL – for favour of kind information please.
2. D.G.M. (Projects)
3. Sr.Mgr.(E) & Commissioning In-charge of 7th Unit. – Sri R.N. Sil
4. Sr.Mgr.(E) – Sri G. Mitra.
5. A.S.M. (Mech.) – Sri T.K. Pal

C/c.
F/c.
E/C

16/4/08
Genl. Manager (P.P)

(8)

THE DURGAPUR PROJECTS LIMITED

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Regd. Office- Administrative Building, Durgapur – 713 201.
Tele Fax.- 91 343 255 6786, 255 6251.

No. DPL/PC/7th Unit/DEC/ 2662 Dated : 16.4.08

To
Mr. Shen Jianrong,
Project Manager,
Dongfang Electric Corporation,
DPL Site Office,
Durgapur 713201 FAX:255 3187.

Sub.: Stoppage of Unit-7 reportedly due to waste coal, mill blockage & enlarging mill bunker grate.

Ref: Your letter Nos. (1)DEC-DGE-S-TE-1345 dated 2.4.2008.
(2) DEC-DGE-S-TE-1346 dated 3.4.2008.
(3) DEC-DGE-S-TE-040408 dated 4.4.2008.

Dear Sir,

This is with reference to the above, accusing DPL of supplying coal containing many foreign materials for which there has been a reported stoppage of Unit-7 on 3.4.2008.

DEC has a habit of pointing fingers to DPL for any malfunctioning of their equipment without analyzing the reasons for the same. DEC may keep it in mind that DPL engineers have long standing working experience in power plant and any accusation not based on facts and not supported by technical analysis will simply be not taken cognizance of by DPL.

To put the matters straight, the foreign materials mainly consisted of iron rod used for reinforcement of the civil structures being carried out by the sub-contractor of DEC at the bunker floor. Still there are lot of iron rods scattered here and there and those rods are the materials of the contractor of DEC entrusted for civil work in the bunker floor which has not yet been completed. To prevent the iron rods from entering the coal bunkers, DEC should have deployed their manpower at bunker floor. Also, it may be noted that Coal Handling System responsible for supplying coal to the boiler, is provided with magnetic separators which will not allow any iron rod to enter the bunkers. The first pre-condition for establishing who is responsible for ingress for foreign materials in the coal bunkers is that DEC should arrange to remove all the contractors along with their men and materials, working under DEC, from the bunker floor.

Regarding enlarging of mill bunker grate, DPL has taken the decision as the owner of the plant. It may be pointed out that the enlarging the mill bunker grate will prevent coal from spilling over and assist in prevention of the entry of reinforcement rods along with spillage coal to enter the bunker. Therefore, your apprehension that increasing of mill bunker grates will lead to entry of foreign materials is just opposite of the fact.

The prevention of foreign materials in the bunkers can be ensured by DPL only when all construction materials from the bunker floor heaped by DEC's contractor are removed. You may kindly note the fact that DPL helped a lot in absence of your manpower to clear the blockage of the

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coal feeders. Therefore, it is in the interest of DPL to prevent entry of foreign materials to the bunkers.

The photographs enclosed along with your letter dated 2.4.2008 clearly shows the presence of RC rods which will not be used by CHP sub-contractor. Therefore, please take necessary action to clean the bunker floor of any foreign construction materials. Suppression of facts and diversion of issues will not be taken lightly by DPL.

Thanking you,

Yours faithfully

1st/4/08

(A. K. Chakraborty)
Genl. Manager (PP & ETD) &
Project Manager, 7th Unit

Copy to :

1) MD, DPL – for favour of information please.
2) DGM (Project)
3) Sr. Mgr.(E) (R.N. Sil) & Commissioning I/C, 7th Unit
4) Sr. Manager (E) (Sri G. Mitra)
5) Addl. Sr. Manager (Mech.), DPL
6) Office Copy

Kolkata office : 1, Shakespeare Sarani, Kolkata – 700 071, Tele Fax : 033 2823492

E\GM\DEC

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