



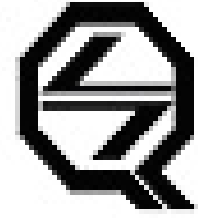
भारत सरकार

GOVERNMENT OF INDIA

केंद्रीय विद्युत प्राधिकरण

Central Electricity Authority

ताप विद्युत नवीनीकरण एवं आधुनिकीकरण



Thermal Renovation and Modernisation Division

Muzaffarpur TPS of KBUNL Unit-1 & 2 Under R&M



On the occasion of signing of 2nd phase MoU between CEA and JCOAL

Quarterly Review Report
Renovation, Modernisation and Life Extension of
Thermal Power Stations
{2nd Quarter of 2012-13, (July – Sept. 2012) during 12th Plan}

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Foreword

Electric energy is the driving wheel of modern Industries. Accordingly Govt. of India have taken a number of initiatives which, inter-alia, include new multi modal electricity generation capacity addition. To further supplement the above efforts in the area of efficient power generation, Renovation & Modernization (R&M) and Life Extension (LE) of the existing old power stations have been recognized as one of most cost-effective options due to its short gestation period and low cost.

The Thermal Renovation & Modernization (TRM) Division is entrusted with the responsibility of monitoring the progress of R&M/LE activities costing more than ₹ 100 Crore in thermal power generating units in the country till the units are re-commissioned. Based on the information received from various utilities undertaking the R&M/LE works, the Quarterly Review Report (QRR) is prepared regularly by TRM Division and circulated to senior officers in MOP and CEA to keep them abreast with the latest status of the physical and financial progress of R&M/LE works at various thermal units. The QRR is also available on CEA website <http://cea.nic.in>

The R&M works at DPL TPS unit-6 (110 MW) and Patratu TPS unit -10 (110 MW) has been completed during Ist Quarter of 2012-13. Synchronization of Bhatinda TPS unit -3 (110 MW) after LE works and Tanda Unit -2 (110 MW) has been completed during 2nd Quarter of 2012-13. In order to carry out R&M/LE works, Bathinda TPS Unit - 4 (110 MW), Barauni TPS Unit - 6&7 (2x110 MW), Muzaffarpur TPS Unit - 1&2 (2x110 MW), Harduaganj TPS Unit -7 (110MW), Obra TPS Unit 7,10 & 11 (1x100+2x200 MW), Patratu TPS Unit 9 (110 MW) were already under shut down and supply of materials/equipments and erection -commissioning activities continued for above mentioned thermal units.

Under Energy Efficiency Programme funded by KfW Bank/Germany, the DPRs for R&M/LE works for Unit-3 (210 MW) Nasik TPS of Mahagenco, Unit - 1, 2 & 3 (3x210 MW) Kolaghat TPS of WBPDC and Unit - 1, 2 & 3 (3x210MW) Bokaro 'B' TPS of DVC have been prepared. The DPRs in respect of U-3, Nasik TPS and U-1,2&3 Kolaghat TPS have been accepted by the respective utilities.

Under Indo-German Energy Forum (IGEF), Phase-II activity, M/s Lahmeyer International (India) Ltd. has been appointed as a consultant and the contract was signed on 16.03.2012 between CEA and M/s Lahmeyer to provide the consultancy services for 'Development of Tendering Procedures and Model Contract document for R&M of Fossil Fuel Based Power Plants in India'. The project is funded by KfW Bank/Germany.

The World Bank is providing Technical Assistance to CEA of US \$ 1.1 million as a part of GEF grant under "Coal Fired Generation Rehabilitation Project -India" for addressing barriers to Energy Efficiency R&M in India. M/s. ABPS Infrastructure Advisory Services Ltd., is working as ISC (Implementation Support Consultant) to assist CEA for implementing the project under title "Technical Assistance to CEA". M/s Mercados Energy Market India has been appointed as a Consultant for "Study on Reduction of Barriers to R&M Interventions in TPS in India" and also for the Study on Developing Markets for implementation of R&M in TPS in India" wef. 24.04.2012 & 14.05.2012 respectively. M/s KPMG has been appointed as a Consultant w.e.f. 16-07-2012 for the consultancy services "Review of Institutional Capacity and capacity strengthening interventions in CEA". M/s WAPCOS Ltd. has been appointed as a Consultant for the study "Review of Experience from Pilot R&M Interventions in TPS in India" wef 23-07-2012.

The 2nd MOU between CEA and JCOAL has been signed on 11.06.2012 for carrying out diagnosis activity for the project on efficiency and environmental improvement of coal fired power stations. Accordingly, Unit no. 4 of Durgapur TPS of DVC and one unit each from Badarpur TPS St.-II and Unchahar St-I of NTPC have been identified for studies by the JCOAL team.

We heartedly acknowledge and appreciate the co-operation of the Utilities/Organizations for providing the necessary and relevant information regarding the physical and financial progress of their R&M projects. We would be highly grateful for the suggestions/feedback for further improvement in the Quarterly Review Report.

नई दिल्ली
दिनांक : 17.10.2012

(तेजिंद्र पाल सिंह)
मुख्य अभियन्ता

Highlights

1. LE/ R&M Achievements during 11th Plan (2007 – 2012)

Sl. No.	Particulars	State sector		Central sector		Total (State + Central)	
		No. of units	Capacity (MW)	No. of units	Capacity (MW)	No. of units	Capacity (MW)
(A)	LE works						
1.	Completed during 11 th Plan	10	1024	3	267	13	1291
(B)	R&M works						
2.	Completed during 11 th Plan	20	4485	39	10370	59	14855
	TOTAL	30	5509	42	10637	72	16146

2. LE / R&M Programme during 12th Plan (2012 - 2017)

S.No.	Particulars	Revised Tentative LE/R&M works during 12 th Plan on account of slippage from 11 th Plan		Total (State Sector + Central Sector)
		State Sector	Central Sector	
		No. of units & capacity (MW)	No. of units & capacity (MW)	
1	2	3	4	5
1.	LE	38 (6820)	32 (5246)	70 (12066)
2.	R&M	20(4150)	45 (13151)	65 (17301)
Total		58 (10970)	77 (18397)	135 (29367)

(Details are furnished at Appendix I)

3. Important Achievements of R&M and LE Projects during 2012-13 (upto 30.09.2012)

R&M:

- i) DPL TPS Unit – 6 (110 MW) - Synchronised on 07.05.2012.
- ii) Patratu TPS Unit – 10 (110 MW) - Synchronised on 24.05.2012.
- iii) Tanda TPS Unit -2 (110 MW) Synchronised on 15.09.2012.

LE :

- i) Bathinda Unit – 3 (110 MW) Synchronised on 5.8.2012.

Total of R&M and LE :

No. of Units 4, Total capacity – 440 MW

4. External Co-operation for R&M/LE of TPS

The status of activities under external cooperation for R&M/LE of TPS is furnished below (as on 30.09.2012) :-

(A) KfW funded Programme

(i) Preparation of DPRs for EE R&M by the consultant M/s Evonik Energy Services Pvt. Ltd., Germany.

a) Unit-3(210 MW) of Nasik TPS

The DPR was prepared by M/s. Evonik and the same has been accepted by Mahagenco/ MERC. As per DPR the estimated cost of R&M project is as Rs.481 Crs.

b) Unit 1,2 & 3 (3x210 MW) of Kolaghat TPS

The DPRs were prepared by M/s. Evonik and the same have been accepted by WBPDCCL.

c) Unit 1, 2 &3(3x210 MW) of Bokaro 'B' TPS

The final DPRs have been prepared and sent to DVC in March 2012. The acceptance of DPRs by DVC is awaited.

(ii) Phase-II activity: Development of Tender Procedure and Model Contracts for R&M of Fossil Fuel Based Power Plants in India.

M/s Lahmeyer International (India) Ltd. has been appointed as a Consultant wef 16-03-2012 to provide the consultancy services for 'Development of Tendering Procedures and Model Contract document for R&M of Fossil Fuel Based Power Plants in India'. The final inception report was submitted on 29-08-2012.

(B) 'Technical Assistance to CEA' funded by World Bank under the umbrella project "Coal Fired Generation Rehabilitation Project-India"

The World Bank is providing technical assistance of US \$ 1.1 million as a part of GEF grant to CEA under "Coal Fired Generation Rehabilitation Project-India" for addressing the barriers to Energy Efficient R&M of coal fired generating units in India. The Technical Assistance to CEA project is being implemented by CEA through appointment of consultants for carrying out the various studies in the field related to R&M of thermal power stations.

The status of appointment of various consultants for carrying out the studies is as under:

Sl. No.	Consultancy services	Status as on (31.09.2012)
1.	Implementation Support Consultancy (ISC)	M/s ABPS Infrastructure was appointed as ISC on 28-10-2010 for assisting CEA in implementing the project.
2.	Study on Reduction of Barriers to R&M intervention in thermal power station in India.	M/s Mercados Energy Market India has been appointed as a Consultant w.e.f. 24-04-2012.
3.	Study on Developing Markets for implementation of R&M in thermal power stations in India	M/s Mercados Energy Market India has been appointed as a Consultant w.e.f. 14-05-2012.
4.	Review of Experience from Pilot R&M projects	M/s WAPCOS Ltd. has been appointed as a Consultant w.e.f. 23-07-2012.
5.	Review of Institutional Capacity and capacity strengthening interventions in CEA	M/s KPMG has been appointed as a Consultant on 16.07.2012.

(C) Japan-India co-operation for Pre- Primary study of Efficiency and Environmental improvement of Coal fired stations.

The 2nd Phase MOU between CEA and JCOAL has been signed on 11.06.2012 for carrying out detail diagnostic study for energy efficiency oriented R&M activities in three nos. of units.

(D) JICA Study on Renovation & Modernization / Complete Replacement of State Sector old inefficient coal based thermal power station in India.

A study on renovation & modernization / complete replacement of State sector old inefficient coal based thermal power station in India was undertaken by JICA under directives of Government of India covering the State sector power station viz. Obra A TPS Unit No. 1 to 8 (U.P), Satpura TPS Unit No. 1 to 5 (M.P), Bhusawal TPS Unit No. 2 & 3 (Maharashtra) and Parli TPS Unit No. 3 to 5 (Maharashtra). Final Report of their observation has been submitted on 21.06.2012

Quarterly Review Report on Renovation, Modernisation and Life Extension of Thermal Power Plants

1.0 Introduction

At the time of independence, the total installed capacity in the power sector was 1362 MW of which steam power plants contributed 756 MW. The installed generation capacity has since grown manifold. The total installed capacity as on 30.09.2012 was 207876.03 MW of which Thermal power plants contributed 138806.18 MW (66.8%). The break up of 66.8% thermal power plants is 57.1% (Coal based), 9.1% (Gas based) and 0.6% (Diesel based).

Renovation & Modernization (R&M) is seen as a cost-effective option for additional generation from the existing thermal power stations and better asset management due to its low cost and short gestation period. Besides generation improvement and life extension, other benefits achieved from R&M / LE include improvement in availability, safety, reliability and environmental emissions.

Many of the thermal power plants are not operating to their full potential and large numbers of thermal units are old and outlived their normal life. Presently, a large number of 200/210 MW units have completed or are near completion of their normal design life. The perspective R&M programme aims at extending their operating life further and also up grade their performance through Energy Efficient R&M (EE R&M).

2.0 Objective of R&M Programme

The main objective of Renovation & Modernisation (R&M) of thermal generating units is to make the operating units well equipped with modified / augmented latest technology equipment and systems with a view to improving their performance in terms of output, reliability and availability, reduction in maintenance requirements, ease of maintenance and minimizing inefficiencies.

3.0 Objective of Life Extension Programme

The R&M programme is primarily aimed at generation sustenance and overcoming problems. The life extension (LE) programme on the other hand focuses on plant operation beyond their original design life after carrying out specific life assessment studies of critical components.

4.0 Renovation and Modernisation (R&M) and Life Extension Programme (LEP) from 7th Plan onwards till 11th Plan

R&M Programme in a structured manner was initiated in 1984 as a centrally sponsored programme during 7th Plan and the programme continued during the two Annual plans 1990-91 & 1991-92. The momentum for undertaking R&M works continued during the 8th & 9th Plan. But the same could, however not be sustained during 10th Plan. The plan wise details are given below :-

S. No	5-Year Plan	Year	No. of TPS / No. of Units	Capacity (MW)	Additional Generation Achieved MU/ Annum*	Equivalent MW**
1	7 th Plan & 2 Annual Plans	85-86 to 89-90 & 90-91, 91-92	34 / 163	13570	10000	2000
2	8 th Plan (R&M) (LEP)	92-93 to 96-97	44 / 198 43/(194) 1 (4)	20869 (20569) (300)	5085	763
3	9 th Plan (R&M) (LEP)	97-98 to 2001-02	37 / 152 29/ (127) 8/ (25)	18991 (17306) (1685)	14500	2200
4	10 th Plan (R&M) (LEP)	2002-03 to 2006-07	9/25 (14) (11)	3445 (2460) (985)	2000	300
5	11 th Plan (R&M) (LEP)	2007-08 to 2011-12	21/72 (15/59) (6/13)	16146 (14855) (1291)	5400	820

*Tentative figure.

** Equivalent MW has been worked out assuming PLF prevailing during that period.

5.0 National Perspective Plan

Based on the discussions held with Ministry of Power, various utilities, PFC and BHEL, CEA have prepared a “National Perspective Plan for Renovation & Modernisation and Life Extension and uprating (LE&U) of thermal power stations upto the year 2016-17”. This document was released by Honorable Minister of Power on 14.12.2009 on the occasion of Energy Conservation day.

6.0 LE / R&M Programme during 12th Plan (2012 - 2017)

Break-up of revised tentative LE and R&M works of 29367 MW, on account of slippage from 11th Plan, to be taken up during 12th Plan in terms of Central/State sector-wise is furnished below (details are furnished at Appendix D):

S.No.	Particulars	Revised Tentative LE/R&M works during 12 th Plan on account of slippage from 11 th Plan		Total (State Sector + Central Sector)
		State Sector	Central Sector	
		No. of units & capacity (MW)	No. of units & capacity (MW)	
1	2	3	4	5
1.	LE	38 (6820)	32 (5246)	70 (12066)
2.	R&M	20(4150)	45 (13151)	65 (17301)
Total		58 (10970)	77 (18397)	135 (29367)

6.1 Details of LE and R&M works to be completed during the first years of 12th Plan (2012-13) as per RFD (Result Framework Document):

During the first year of 12th Plan period LE works on 4 nos. units (440 MW) and R&M in 6 nos. units (646 MW) have been identified, details are furnished in Appendix – II A & II B.

Sl. No	Particulars	State sector		Central sector		Total (State + Central)	
		No. of units	Capacity (MW)	No. of units	Capacity (MW)	No. of units	Capacity (MW)
1	LE works Programmed/ Achieve	4/ 1	440/ 110	-	-	4/ 1	440/ 110
2	R&M works Programmed/ Achieve	4/ 2	430/ 220	2/ 1	216/ 110	6/ 3	646/ 330
3	TOTAL Programmed/ Achieve	8/ 3	870/ 330	2/ 1	216/ 110	10/ 4	1086/ 440

6.2 Achievement of R&M/LE Programme during the 12th Plan up 30th September 2012:

6.2.1 Achievement of LE Programme during the 12th Plan up 30th September 2012:

During 12th Plan, LE works have been completed in 1 units in the state sector as details furnished below:-

State Sector (1 No. of unit)

1. Bathinda TPS Unit – 3 (110 MW) - Synchronised on 05.08.2012.

Sub total (LE) - 1 Unit (110 MW)

6.2.2 Achievement of R&M Programme during the 12th Plan up 30th September 2012:

During 12th Plan, R&M works have been completed in 2 units in the state sector as details furnished below:-

State Sector (2 Nos. of units)

1. DPL TPS Unit – 6 (110 MW) - Synchronised on 07.05.2012.
2. Patratu TPS Unit – 10 (110 MW) - Synchronised on 24.05.2012.

Central Sector (1 no. unit)

1. Tanda TPS Unit – 2 (110 MW) – Synchronised on 15.09.2012

Sub total (R&M) - 3 Units (330 MW)

Total (LE and R&M) - 4 Units (440 MW)

7.0 Future vision for Life Extension / R&M Programme

The coal based thermal plants are the backbone of Indian power sector. Presently, 200/210/250/500 MW thermal units contribute about 60% of total generation in the country. They are performing better in terms of their plant load factor and availability. However, a large number of such 200/210 MW units have or are near completing their normal operating life and need modernization and life extension. There exists a potential for enhancing their rated capacity by 4-8% and efficiency by 8 to 10% in various 200/210 MW LMZ machines. Few such units have been taken up as pilot projects under Energy Efficient R&M (EE R&M) programme through funding support from World Bank and KfW, Germany. **The approach to R&M and Life Extension & Uprating (LE&U) has shifted primarily from “generation maximization” to “performance enhancement” with efficiency improvement and plant uprating as an integral part.**

So far, R&M activities were confined to old, small size units to sustain their operation, improve plant availability and extend their operating life. However, such units are highly inefficient and beset with various operational problems. It is aimed at to gradually decommission such units.

8.0 External Co-operation for R&M of TPS

To demonstrate the Energy Efficiency R&M programme in thermal power stations in India, a few pilot R&M projects have been financed by some external funding agencies such as KfW Development Bank-Germany, World Bank, European Union (EU) etc. The soft loans are provided by these external agencies for energy efficiency R&M programmes. Also, KfW & World Bank have provided some grant for technical assistance for preparation of Feasibility Reports/DPRs at selected thermal units and carrying out some R&M related studies. METI (Ministry of Economy, Trade and Industry), Japan and MOP, Govt. of India have agreed to extend their cooperation in sharing of technical expertise as well as in actual implementation of mutually agreed techno-economical R&M solutions. In addition to this, KfW has also financed the project “Development of Tender Procedure and Model Contract for the R&M of Fossil Fuel Based Thermal Power Plants in India”. The details of the above programme are as follows:-

8.1 Energy Efficiency R&M Programme funded by KfW Bank-Germany

Under Energy Efficiency R&M Programme, KfW Development Bank–Germany has provided a soft loan of Euro 90 million for implementation of Energy Efficiency R&M of two units of 210MW viz Nasik Unit 3 of MAHAGENCO and one Unit of Kolaghat TPS of WBPDC. In addition to the above, KfW Bank has also provided a grant of Euro 1.3 million for preparation of feasibility reports/DPR to identify & finalize the scope of works for R&M/LE for the following seven units at three thermal power stations through a consultant:-

- i) Nasik TPS, U-3 (210MW) of Mahagenco
- ii) Kolaghat TPS, U-1, 2 & 3 (3x210MW) of WBPDC.
- iii) Bokaro ‘B’ TPS, U-1, 2 & 3 (3x210MW) of DVC.

M/s Evonik Energy Services GmbH, Germany was selected as Consultant through ICB route to prepare feasibility study / DPRs for the above seven (07) units. The implementation of R&M/LE works based on the Detailed Project Report (DPRs) would be taken up by the concerned utilities. The present status of the programme is as under:-

i) Nasik TPS

The final DPR for Unit-3 (210 MW) was prepared by the consultant, and same has been accepted by MAHAGENCO and MERC. Mahagenco have appointed M/s Steag Energy, Noida as an Implementation Support consultant. Mahagenco is in the process of awarding BTG package for undertaking R&M/LE works.

ii) Kolaghat TPS

The DPRs for Unit-1,2& 3 (3x210 MW) of Kolaghat TPS,WBPDCL were prepared by the consultant and the same have been accepted by WBPDCL.

iii) Bokaro 'B' TPS

The revised DPRs for Unit-1, 2& 3 (3x210 MW) of Bokaro 'B' TPS were prepared by the consultant and sent to DVC for their comments/ acceptance on 21.03.2012. The comments/ acceptance of DVC is awaited. Member (Thermal),CEA vide his letter dated 09-08-2012 has requested CMD,DVC to expedite the process of acceptance of DPR.

8.2 Development of the Tender Procedures and Model Contract for the R&M of Fossil Fuel Based Power Plants in India.” Funded by KfW Development Bank– Germany.

The Sub-Group-I on “ Efficiency Enhancement in Fossil Based Power Plants” constituted under the Indo-German Energy Forum, in its first meeting held on 12.03.2008 identified the Development of Standard Documents for R&M Projects among the three other issues. The development of Standard Documents was envisaged to be done in two phases as under.

Phase-I Task

The objective of Phase-I activity is an assessment of tendering procedures currently being followed by public utilities in India and a review of documents used for standard R&M projects as well as the documents which have already been developed for projects financed particularly by World Bank. The Phase-I Activity was carried out by the consultant-M/s. Evonik Energy Services India appointed and funded by GIZ. M/s. Evonik Energy Services India submitted the report on Phase-I activity in September 2009.

Phase-II Task

The main objective of Phase-II activity is the preparation of the model documents/templates for R&M Projects in consultation with task force, power utilities & financing agencies. It is intended to apply the documents for the Energy Efficiency Programme financed by KfW.

A Task Force on “Development of Tender Procedures and Model Contracts for the Renovation & Modernization (R&M) of Fossil Fuel Based Power Plants in India” under the chairmanship of Member (Thermal), CEA has been constituted vide MoP letter no. 5/33/2009-S.Th. dated 29/10/2009 comprising the members from MOP,CEA, NTPC and various power utilities to carry out the Phase-II activity.

The first Meeting of Task Force was held on 20th November 2009 in CEA, New Delhi to discuss the report of Phase-I activity and further approach & methodology for development of the tender procedures and model contract for the R&M of fossil fuel based power plants under Phase-II activity. It was decided to carry out the activity through a consultant with KfW funding. The MoP nominated CEA as Project Implementing Agency in December 2009 to carry out the Phase-II Activity. M/s Lahmeyer International India Pvt. Ltd has been appointed as a consultant w.e.f 16-03-2012 for carrying out Phase -II activity.

The fourth Meeting of Task Force was held on 03-08-2012 wherein Inception Report, submitted by the M/s lahmeyer, was discussed. Based on the comments/observations of CEA/KfW & members of the Task Force, M/s Lahmeyer revised the Inception Report and submitted the final Inception Rreport on 29-08-2012. M/s lahmeyer have also submitted model Feasibility Report on 24-08-2012 & model concept on tendering procedure on 21-09-2012. The same are under examination.

8.3 “Coal-Fired Generation Rehabilitation Project-India” funded by World Bank.

The World Bank has financed the “Coal-Fired Generation Rehabilitation Project-India” for demonstrating Energy Efficiency Rehabilitation & Modernization (EE R&M) at coal fired generating units through rehabilitation of 640 MW of capacity across three States-West Bengal, Haryana and Maharashtra. The above project has two components:-

Component-1. Energy Efficiency R&M at Pilot Projects

This component would fund implementation of Energy Efficient R&M of 640 MW capacity comprising Bandel TPS Unit-5(210 MW) of WBPDC, Koradi TPS Unit-6(210 MW) of Mahagenco and Panipat TPS Unit-3&4 (2x110 MW) of HPGCL. The World Bank has earmarked US \$ 180 million of IBRD loan and US \$ 37.9 million of GEF grants for the Component-1.

Component-2. Technical Assistance to CEA and Utilities

The Technical Assistance component of the project is aimed at providing support in implementation of EE R&M pilots, developing a pipeline of EE R&M interventions, addressing barriers to EE R&M projects and strengthening institutional capacities of implementing agencies for improved operation and maintenance practices. The World Bank has earmarked US \$ 7.5 million GEF grant for the Component-2.

8.3.1 World Bank funded Energy Efficiency Pilot R&M Projects

i) Bandel TPS, (Unit-5,210 MW)

Total cost of the project is around Rs. 652 crores(based on the bidding). Fund allocation for the Bandel TPS is around US \$ 59 million (Loan) and Grant US \$ 12.45 million. The execution period of the project is 24 months as per tender document. DPR for the R&M project consisting major packages viz Main Plant Package (BTG -Boiler, Turbine & Generator), Coal Handling System Package (CHP), Ash Handling Package & Water System Package (AHP & Water), Electrical System Package have been prepared by the M/s Evonik Energy Services (Project design consultant). Cumulative expenditure incurred is Rs. 54.56 Crore.

Status of Physical Progress:

➤ BTG Package:

Letter of Award (LOA) issued to M/s Doosan Heavy Industries & Construction Co. Ltd (DHICL) and their associate on January 10, 2012 at a total Package cost of Euro 37,584,887 and Rs 29, 09,782,849/- only and the Contract has been signed on February 29, 2012. Kick-off meeting with M/s DHIC was held on April 02, 2012 and technical review meeting held on April 26th & 27th, 2012. Expected date of completion of BTG package is June,2014.

➤ CHP Package:

The NIT was published on June 26, 2012 after getting ‘No Objection’ from World Bank on June 14, 2012. In response to the NIT, twelve parties purchased the tender document. The Pre-bid meeting was held on July 13, 2012. The technical bids was opened on August 28, 2012 and the bid evaluation is in progress.

➤ AHP Package:

WBPDC mentioned that the bid document for first stage bidding (RFQ stage) is under preparation and it is expected to submit to World Bank by 3rd week of

September, 2012 for their “No Objection”. In-house Finalization of Technical & Commercial specification is in process.

➤ **Electrical Package:**

Notice Inviting Tender for Electrical Package was floated on May 14, 2012. In response to the NIT, six parties purchased the tender document. The technical bids were opened on July 18, 2012. WBPDCCL further submitted that the evaluation report has been prepared and forwarded to World Bank for their review on August 31, 2012.

Consultancies

• **Implementation Support / Quality Assurance Consultant :**

M/s Development Consultant Pvt. Ltd.(DCPL) has been appointed as a consultant and the Contract was signed on April 10, 2012 and have started their works from 22-05-2012. The Contract is expected to be completed on August 10, 2014.

• **O&M Capacity Building:**

It is submitted that as WBPDCCL's O&M Capacity program is already undertaken under DFID Grant, the World Bank approved re-allocation of fund from O&M Capacity Building to Implementation Support/Quality Assurance Consultant service.

ii) **Koradi TPS, (Unit-6,210 MW)**

Total cost of the project is Rs. 486 Cr. Fund allocation for the Koradi TPS is around US \$ 59 million (Loan) and Grant US \$ 12.45 million. M/s Evonik Energy Services (Project design consultant) prepared the DPR. The same has been approved and accepted by MSPGCL Board on 26-06-2009. In-principle approval of MERC for capital expenditure had been received on 24-05-2010. The R&M project consists of four major packages BTG, Electrical, BOP & CHP.

Status of Physical Progress:

➤ **BTG Package**

The second stage bids were opened on August 23, 2012. Mahagenco further submitted that second stage bid evaluation is in process and bid evaluation report is expected to be completed by November 6, 2012. Further, the expected date of completion of the contract is August 26, 2015.

➤ **Electrical Package**

The Letter of Award issued to M/s ABB Ltd on March 19, 2012 and final contract was signed on March 25, 2012. Further, the expected date of completion of the contract is August 26, 2015.

➤ **BOP Package**

Letter of Award issued to M/s Tecpro Systems Ltd. on July 16, 2012. The final contract was signed on August 10, 2012. Further, the expected date of completion of the contract is August 26, 2015.

➤ **CHP Package**

Due to closing of units 4 x 120 MW, R&M of CHP package has been cancelled.

Consultancies

• **Koradi,U-6: Implementation Support Consultant :**

The LOA issued to Tata Consulting Engineering Ltd.(TCE) on May 09, 2012 and contract was signed on June 1, 2012. The expected date of completion of the contract is August 26, 2015.

- **Koradi,U-6: Quality Assurance Consultant :**

RfP documents issued to all shortlisted consultants on November 16, 2011. Final date of proposal submission will be decided after the BTG package supplier is identified. the expected date of completion of the contract is August 26, 2015.

- **Rapid Social Assessment Consultant (for three plants Chandrapur TPS (Unit-1&2,2x210 MW), Bhusawal TPS (Unit-2, 210 MW) and Parli TPS (Unit-3, 210 MW)):**

Letter of Award issued to M/s Harshal Gramin Vikas Bahu Sanstha ,Chandrapur and the final Contract was signed on July 29, 2011. Based on the discussions with World Bank officials (held on July 30, 2012) at MSPGCL Head Office, the RSA reports are to be modified and the final RSA report is likely to be submitted by September 25, 2012. Mahagenco submitted that the date of completion of Contract is being further extended from August 30, 2012 to December 31, 2012.

- **Chandrapur, U-1&2: Project Design Consultant**

The Contract was signed with M/s Energo Engineering Project Ltd. on October 11, 2010 . The RLA study report and Assessment Report of all systems was forwarded to M/s Energo on July 27, 2012. The Detailed Project Report with Options is expected to be finalized by September 30, 2012. The expected date of completion of the contract is May 10, 2013.

- **Chandrapur, U-1&2 EADD Consultant**

The Contract was signed with M/s Ernst & Young Ltd. on October 12, 2010. Final EADD Report has been submitted by the executing agency on March 22, 2012, however, the same is to be modified as per the discussions held with World Bank Officials on July 30, 2012 at MSPGCL Head Office.

- **Bhusawal, U-2: Project Design Consultant**

The Contract was signed with M/s Energo Engineering Project Ltd. on June 14, 2011. Mahagenco submitted that the Energy Audit Report and the Assessment Report of all systems (including various R&M Options) are under progress and expected to be completed shortly. The Detailed Project Report with Options is expected to be finalized by September 30, 2012.

- **Bhusawal, U-2: EADD Consultant**

The Contract was signed with M.s Enzen Global Solutions Pvt. Ltd. on June 17, 2011. The Inception report was submitted on July 26, 2011. Final EADD Report was prepared and submitted by the executing agency on May 25, 2012. The EADD report is to be modified based on the discussion held with the World Bank officials (held on July 30, 2012). Further, the date of completion of Contract is December 31, 2012.

- **Parli, U-3, Design Consultant**

Contract was signed with Energo on September 05, 2011. Mahagenco submitted that the Assessment Report of all systems (including various R&M Options) is under progress and is expected to be completed by September 30, 2012. The Detailed Project Report with Options is expected to be finalized by October 30, 2012. Further, the Contract is expected to be completed by December 28, 2012.

- **Parli, U-3, EADD Consultant:**

Contract Agreement was signed between M/s Enzen Global Solutions Pvt. Ltd & Mahagenco on August 05, 2011. Inception report was submitted on November 18, 2011. Mahagenco submitted that the Draft EADD Report will be modified based on the discussion held with the World Bank Specialists on July 30, 2012. Accordingly, final EADD report is expected to be finalized by September 30, 2012. Further, the expected date of completion of the contract is November 5, 2012.

Status of Financial Progress :

Original Estimated Cost incl. R&M project & Consultancies (Rs. Crore) : Rs 500.19
Cumulative expenditure incurred (Rs. Crore) : Rs. 0.72

iii) Panipat TPS (Unit-3&4, 2x110 MW)

Total cost of the project is Rs. 448.4 Crores comprising Govt. of Haryana equity Rs. 118.36 Cr (US \$ 27 million), World Bank Loan- Rs. 272.8 Cr.(US \$ 273 million) and GEF Grant of Rs. 57.2 Cr.(US \$ 13 million). In addition to above Technical Assistance of US \$ 1.8 million under GEF Grant has been provided for seven(07) consultancies.

Status of Pilot R&M Project at Panipat TPS (Unit 3, 110 MW):-

HPGCL in its R&M progress report for the month of August 2012 submitted that the Board of Directors of HPGCL in its 86th Meeting held at Urja Bhawan, Panchkula on March 15, 2012 discussed the matter of the Financial Sensitivity Analysis of the change in Station Heat Rate and concluded that R&M of Unit 3 & Unit 4 (each 110 MW) through World Bank Funding is not financially viable in view of past experience of R&M and high sensitivity of returns of Station Heat Rate (SHR). In this context, the State Government of Haryana has decided as under:

- To discontinue comprehensive R&M through World Bank funding since the same is not financially viable in view of high sensitivity of returns of Station Heat Rate (SHR).
- To discontinue the balance work of Design Consultancy and make payments of the works already completed by the consultant under GEF grant. However, the DPR will have to be finalized as the World Bank has sought the copy of the same.
- To continue with the consultancy works relating to "Assessment of O&M Practices at PTPS, Panipat" and "Strengthening of O&M Practices at PTPS, Panipat" since these activities are covered under GEF grant.

In this regard, HPGCL has requested World Bank to consider foreclosure of the Loan and also requested that GEF grants amounting Rs. 1.54 Crore and Rs. 0.66 Crore against Implementation Support Consultant and Quality Assurance Consultant shall not be availed because of foreclosure of the Loan Agreement. Further, HPGCL discussed the matter with World Bank team on July 16, 2012 at Panchkula and requested World Bank for reallocation of the unutilized GEF grant of Rs. 497.65 Lakh.

Status of Financial Progress :

Estimated Expenditure incl. R&M project & Consultancies (Rs Crore) : Rs 456.32
The Cumulative expenditure (Rs Crore) : Rs 0.53

8.3.2 Technical Assistance to CEA

The World Bank is providing technical assistance of US \$ 1.1 million as a part of GEF grant to CEA under “Coal Fired Generation Rehabilitation Project-India” for addressing the barriers to Energy Efficient R&M of coal fired generating units in India. The project is being implemented by CEA through appointment of consultants for carrying out following four studies:

- a) Review of institutional capacity and capacity strengthening interventions at CEA.
- b) Study on reduction of barriers to R&M interventions in thermal power stations in India.
- c) Study on developing markets for implementation of R&M in thermal power stations in India.
- d) Review of experience from Pilot R&M interventions in thermal power stations in India.

The appointment of various consultants for carrying out the studies is under progress and the present status is as under:

Sl. No.	Consultancy services	Status as on (30.09.2012)
1.	Implementation Support Consultancy (ISC)	M/s ABPS Infrastructure was appointed as ISC on 28.10.2010 for assisting CEA in implementing the project.
2.	Study on Reduction of Barriers to R&M intervention in thermal power station in India.	M/s Mercados Energy Market India has been appointed as a Consultant w.e.f. 24.04.2012. M/s Mercados visited various power utilities/entities for stake holder consultation during July-September, 2012.
3.	Study on Developing Markets for implementation of R&M in thermal power stations in India	M/s Mercados Energy Market India has been appointed as a Consultant w.e.f. 14.05.2012. M/s Mercados visited various power utilities/entities for stake holder consultation during July-September, 2012.
4.	Review of Experience from Pilot R&M projects	M/s WAPCOS Ltd. has been has been appointed as a Consultant w.e.f. 23-07-2012. M/s WAPCOS submitted Inception Report on 06-09-2012.
5.	Review of Institutional Capacity and capacity strengthening interventions in CEA	M/s KPMG has been appointed as a Consultant w.e.f. 16-07-2012. M/s KPMG submitted Inception Report 30-08-2012.

The Expenditure incurred during the current F.Y.2012-13 is: Rs. 9.61 Lakhs.

The cumulative expenditure incurred till date is : Rs. 29.28 Lakhs.

8.4 Japan-India co-operation for Study on Efficiency and Environmental Improvement of Coal Fired Stations

A MOU between Central Electricity Authority and Japan Coal Energy Centre (JCOAL) for preliminary study of Efficiency and Environment improvement study in coal fired power plants was signed during the meeting of India-Japan high level Energy Dialogues held in New Delhi on 30.4.2010. The purpose of this MOU is to carryout necessary diagnostic activities for

few candidate coal-fired power plants pertaining to Energy Efficient Renovation & Modernisation works and finding out measures to overcome barriers for promoting R&M, towards carrying out efficiency and environmental improvement of coal-fired power plants in India.

Under the MOU, JCOAL had short listed four candidate coal fired power plants viz. Ukai and Wanakbori TPS (GSECL), Ramagundem STPS (NTPC) and Vijaywada TPS (APGENCO) for pre – primary studies. JCOAL visited these stations along with experts and the final report was submitted on 6th May, 2011.

After Pre-Primary Studies, JCOAL have finalized 3 units viz., Vijaywada TPS Unit-1 (210MW) of APGENCO, Wanakbori TPS Unit-1 (200 MW) of GSECL and Kahelgaon STPS Unit-2 (210 MW) of NTPC for full-fledged diagnosis for the project on Efficiency and Environmental Improvement of Indian Coal-Fired power stations. The draft final report had been submitted on 20.04.2012 and debriefing meetings to discuss the views of NTPC, GSECL and APGENCO had been held at NTPC, Noida, Vadodara and Hyderabad on 28th May, 30th May and 2nd June, 2012 respectively.

The 2nd Phase MOU between CEA and JCOAL has been signed on 11.06.2012 for carrying out detail diagnostic study for energy efficiency oriented R&M activities in three nos. of units.

For selection of 3 nos. candidate units proposal was sent to various power utilities. Confirmation from DVC for Durgapur TPS unit no.4 (210 MW LMZ Unit) and one unit each from Badarpur TPS and Unchahar TPS of NTPC have been received. JCOAL has shown their interest to carry out studies in these units. JCOAL has proposed for site visit in these plant during mid of October 2012.

8.5 JICA Study on Renovation & modernization complete replacement of State sector old inefficient coal based thermal power station in India.

A study on Renovation & modernization complete replacement of State sector old inefficient coal based thermal power station in India was assigned to JICA by Government of India in respect of the following State sector power station:

- a) Obra A TPS Unit No. 1 to 8 (U.P) – complete replacement.
- b) Satpura TPS Unit No. 1 to 5 (M.P) – complete replacement.
- c) Bhusawal TPS Unit No. 2 & 3 (Maharashtra) – complete replacement.
- d) Parli TPS Unit No. 3 to 5 (Maharashtra) – complete replacement or R&M.

JICA had conducted site visit in the month of March-April 2012 in above all the TPS and the Final Report of their observation has been submitted on 21.06.2012.

Details of Units where LE/R&M works to be taken up during the 12th Plan

(As on 30.09.2012)

STATE SECTOR (LE Programme)

S.N.	Utility	Name of Station	Unit No.	Year of Comm.	Cap. (MW)	Present status
1	U.P.	Obra	10	1977	200	S/d for LE works since 22.03.2012. Expected to synchronised by April, 2013.
2	U.P.	Obra	11	1977	200	S/d for LE works since 13.07.2011. Expected to synchronised by Nov., 2013.
3	U.P.	Obra	12	1981	200	Works shall be taken up after stabilisation of U-10&11. As per BHEL, both the units are expected to synchronised by Dec., 2014.
4	U.P.	Obra	13	1982	200	
5	U.P.	Harduaganj	7	1978	110	S/d for LE works since 05.03.2011. Expected to synchronised by 31.12.2012.
6	U.P.	Parichha	1	1984	110	Estimated cost of BTG Pkg. of R&M Scheme is Rs. 150 Crore and is to be financed by PFC & UP Govt./UPRVUNL.
7	U.P.	Parichha	2	1985	110	Estimated cost of R&M Scheme is Rs. 287 Crore (BTG works of U-2 & BOP works of U-1&2) and Scheme has been submitted to PFC for financing.
8	Punjab	Bathinda	3	1978	110	The LE works of Unit-3 started on 14.01.2012 by BHEL. Unit synchronised on 05.8.2012.
9	Punjab	Bathinda	4	1979	110	The R&M works of unit-4 started on 05.11.2012., The boiler dismantlement work completed. 80% turbine dismantling works completed. Erection work of Boiler under progress. As per latest commitment by BHEL, unit-4 will be synchronized by 31.03.2013.
10	Haryana	Panipat	3	1985	110	Was identified for World Bank funded project. As per DPR, EER&M is not financially viable.
11	Haryana	Panipat	4	1985	110	
12	Maharashtra	Nashik	3	1979	210	KfW funded project.DPR approved by Mahagenco/Merc. Publishing of NIT is in process.
13	Maharashtra	Nashik	4	1980	210	To be decided inline with Nashik U#3. Consultant for DPR preparation has been appointed.
14	Maharashtra	Koradi	5	1978	210	2 nd stage Bid evaluation is in progress.
15	Maharashtra	Koradi	6	1982	200	WB funded project. DPR approved by MSPGCL/MERC. Electrical pkg. is awarded to M/s ABB. First stage bidding completed for BTG & BOP pkg.
16	Maharashtra	Bhusawal	2	1979	210	WB funded pipeline project. RLA studies completed. DPR yet to be prepared.
17	Maharashtra	Bhusawal	3	1982	210	DPR yet to be prepared
18	Maharashtra	Chandrapur	1	1983	210	WB funded pipeline project. RLA studies completed.
19	Maharashtra	Chandrapur	2	1984	210	

20	Maharashtra	Parli	3	1980	210	WB funded pipeline project. RLA studies completed, DFR/DPR is awaited.
21	Chhattisgarh	Korba (West)	1	1983	210	RLA studies done by M/s Evonik. Preparation of tender documents is in process.
22	Chhattisgarh	Korba (West)	2	1984	210	
23	M.P.	Satpura	6	1979	200	DPR prepared by NTPC at an estimated cost of Rs.2100Cr. Utility is exploring the possibility of carrying out LE works through LROT. However, need based R&M works are planned during AOH.
24	M.P.	Satpura	7	1979	210	
25	Tamilnadu	Tuticorin	1	1979	210	Scope of work finalised at estimated cost of Rs. 129 Cr. Work other than main plant is in progress
26	Tamilnadu	Tuticorin	2	1980	210	Scope of work finalised at estimated cost of Rs. 150 Cr. Work other than main plant is in progress
27	A.P.	Dr. N.T. TPS (Vijaywada)	1	1979	210	77 activities were taken up at an estimated cost of Rs. 193.83 Cr. Anticipated completion by 31.12.2013.
28	A.P.	Dr. N.T. TPS (Vijaywada)	2	1980	210	
29	Karnataka	Raichur	1	1985	210	Need based R&M works planned
30	Karnataka	Raichur	2	1986	210	Need based R&M works planned
31	Bihar	Barauni	6	1983	110	LOA awarded on 15.02.2010. Unit under s/d since 17.03.2012.As per BHEL commitment, synchronisation by March 2013 which may not be possible. BHEL is to furnish revised schedule.
32	Bihar	Barauni	7	1985	110	R&M in progress. Boiler erection in progress. LP and HP rotors are yet to reach at site, ESP erection works has started. BHEL reconfirmed synchronisation by March, 2013.
33	Bihar	Muzaffarpur	1	1985	110	LOA awarded on 15.04.2010. Boiler lightup & turbine boxup completed. Synchronisation is expected by December, 2012 with 5 mills. Readiness of coal mills most critical
34	Bihar	Muzaffarpur	2	1986	110	S/d taken on 29.03.2012. Dismantling work nearing completion, BHEL is to submit revised schedule for Synchronisation .
35	W.Bengal	Kolaghat	1	1990	210	KfW funded project.DPR prepared and accepted by WBPDC.
36	W.Bengal	Kolaghat	2	1985	210	To be decided inline with Kolaghat U#1
37	W.Bengal	Kolaghat	3	1984	210	To be decided inline with Kolaghat U#1
38	W.Bengal	Bandel	5	1982	210	World Bank funded project. Contract for BTG pkg. awarded to M/s DHIC and signed on 29.2.2012 with pkg cost Euro 37.6 million plus INR 291 crores.
Sub Total State Sector (LE)			38		6820	

STATE SECTOR (R&M Programme)

S.N.	Utility	Name of Station	Unit No.	Year of Comm.	Cap. (MW)	Present status
1	U.P.	Obra	7	1974	100	S/d since 01.07.2010. Dismantling works completed, erection started since 3.6.2011. Expected synchronisation as per L-2 schedule is 14.11.2012.
2	U.P.	Anpara	1	1986	210	Estimated cost of R&M is Rs. 856 Cr. Financed by PFC and UPRVUNL. Work is to by BHEL, OEM. Order yet to placed.
3	U.P.	Anpara	2	1986	210	
4	U.P.	Anpara	3	1988	210	
5	U.P.	Anpara'B	4	1993	500	R&M works is being executed by M/s BHEL & M/s MITSUI, Japan. The total cost of scheme is Rs. 691.97 crore of which loan agreement to Rs. 553.576 Crore has been finalised by PFC and remaining Rs. 138.394 Crore from Internal resources. Expected completion by Sept.,2013.
6	U.P.	Anpara'B	5	1994	500	
7	Punjab	Ropar	1	1984	210	Utility decided to do need based R&M at estimated expend. of Rs 55 Cr.
8	Punjab	Ropar	2	1985	210	
9	Punjab	Ropar	5	1992	210	Utility decided to do need based R&M at estimated expend. of Rs 6.5 Cr.
10	Punjab	Ropar	6	2001	210	
11	Haryana	Panipat	5	1993	210	RLA studies done. Scope of work finalised.
12	Gujarat	Wanakbori	1	1982	210	Utility decided to do need based R&M. Works for upgrading of C&I system has already been awarded.
13	Gujarat	Wanakbori	2	1983	210	
14	Gujarat	Ukai	3	1979	200	Utility decided to do need based R&M
15	Gujarat	Ukai	4	1979	200	Utility decided to do need based R&M
16	Rajasthan	Kota	1	1983	110	RRVUNL has identified 10 nos.schemes at an approx expenditure of Rs 285 Cr. and in principal approval has been sought from regulators.
17	Rajasthan	Kota	2	1983	110	
18	Jharkhand	Patratu	9	1984	110	R&M is under progress by M/s BHEL. Synchronisation of U-9 is expected by Jan.,2013.
19	Jharkhand	Patratu	10	1986	110	Synchronised on 24.05.2012.
20	W.Bengal	DPL	6	1985	110	Synchronised on 07.05.2012.
Sub Total State Sector (R&M)			20		4150	

Total State sector (LE+R&M)
58
10970

CENTRAL SECTOR (LE Programme)
Coal Based

S.N.	Utility	Name of Station	Unit No.	Year of Comm.	Cap. (MW)	Present Status
1	DVC	Bokaro 'B'	1	1986	210	Considered under KfW funded project. DPRs were prepared by M/s Evonik. Acceptance from DVC is awaited.
2	DVC	Bokaro 'B'	2	1990	210	
3	DVC	Bokaro 'B'	3	1993	210	
4	DVC	Durgapur	4	1982	210	
5	NTPC	Badarpur	4	1978	210	Under process of retendering of main plant R&M. Switchyard & ESP renovation in progress.
6	NTPC	Badarpur	5	1981	210	
7	NTPC	Singrauli STPS	1	1986	200	Under investment approval .
8	NTPC	Singrauli STPS	2	1987	200	
9	NTPC	Singrauli STPS	3	1983	200	
10	NTPC	Singrauli STPS	4	1983	200	
11	NTPC	Singrauli STPS	5	1984	200	
12	NTPC	Korba STPS	1	1983	200	Under investment approval.
13	NTPC	Korba STPS	2	1983	200	
14	NTPC	Korba STPS	3	1984	200	
15	NTPC	Ramagundam STPS	1	1984	200	Investment approval accorded.
16	NTPC	Ramagundam STPS	2	1984	200	
17	NTPC	Ramagundam STPS	3	1984	200	
Sub total C. S (LE)			17		3460	

R&M Programme

S.N.	Utility	Name of Station	Unit No.	Year of Comm.	Cap. (MW)	Present status
1	NTPC	Singrauli STPS	6	1986	500	Investment approval accorded. Scheme under tendering process
2	NTPC	Singrauli STPS	7	1987	500	
3	NTPC	Korba STPS	4	1987	500	Investment approval accorded. Scheme under tendering process
4	NTPC	Korba STPS	5	1988	500	
5	NTPC	Korba STPS	6	1988	500	
6	NTPC	Ramagundam STPS	4	1988	500	Investment approval accorded. Scheme under tendering process
7	NTPC	Ramagundam STPS	5	1989	500	
8	NTPC	Ramagundam STPS	6	1989	500	
9	NTPC	Farakka Stage-II	4	1992	500	Under tendering stage, all necessary approvals are in place
10	NTPC	Farakka Stage-II	5	1994	500	
11	NTPC	Tanda	2	1989	110	Synchronised on 15.09 2012
12	NTPC	Unchahar	1	1988	210	Scheme finalised. Investment approval accorded. Schemes under tendering stage.
13	NTPC	Unchahar	2	1989	210	
14	NTPC	Unchahar	3	1999	210	
15	NTPC	Unchahar	4	1999	210	
16	NTPC	Vindhyachal	1	1987	210	Scheme finalised. Investment approval accorded. Schemes under tendering stage.
17	NTPC	Vindhyachal	2	1988	210	
18	NTPC	Vindhyachal	3	1989	210	
19	NTPC	Vindhyachal	4	1989	210	
20	NTPC	Vindhyachal	5	1990	210	

CENTRAL SECTOR R&M (Gas Based)

CENTRAL SECTOR R&M (Gas Based)						
1	NEEPCO	Kathalguri CCGT	GT-1	1995	33.50	The scope of work finalised. The proposals are in advance stage of approval for Rs. 102.25 Cr., completion is expected by March, 2014.
2		Kathalguri CCGT	GT-2	1995	33.50	
3		Kathalguri CCGT	GT-3	1995	33.50	
4		Kathalguri CCGT	GT-4	1995	33.50	
5		Kathalguri CCGT	GT-5	1996	33.50	For upgradation of control system of unit-4, orders for Rs. 4.14 Cr. Placed, materials received at site, completion is expected by Oct., 2012.
6		Kathalguri CCGT	GT-6	1996	33.50	
7		Kathalguri CCGT	ST-1	1998	30.00	
8		Kathalguri CCGT	ST-2	1998	30.00	
Sub Total Gas (R&M)			8		261	
Sub total Gas in C.S. (LE + R& M)			23		2046.8	
Total R&M + LE			135		29367	

RFD Target for LE Works during 2012-13

Appendix -II A

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A. State Sector

Status as on 30-09-2012

Sl. No.	Name of Utility	Name of Station	Unit No.	Year of Comm.	Cap. (MW)	Completion Schedule (Actual / Targeted)	Present status / Expected Date of Completion
Punjab							
1	PSEB	Bathinda	3	1978	110	2012-13 (Target)	Synchronised on 05.8.2012.
Bihar							
2	BSEB	Barauni	7	1985	110	2012-13 (Target)	LOA has been awarded to BHEL on 15th Feb.2010 under Rashtriya Sam Vikas Yojana. R&M works of U-7 is in progress and unit synchronization is expected by March, 2013 as per the commitment of M/s BHEL in the review meeting of Secretary, MHI.
3	KBUNL	Muzaffarpur	1	1985	110	2012-13 (Target)	LOA awarded on 15.04.10 under BRGF. Boiler erection & turbine box up completed. As per BHEL synchronization is expected by December, 2012.
4	KBUNL	Muzaffarpur	2	1985	110	2012-13 (Target)	Unit 2 has been handed over to BHEL on 29.03.2012 for R&M works and was committed to be synchronized by Jan., 2013 in the review meeting of Secretary, MHI. As per present status of work the synchronization is likely to go beyond Jan'2013.
Total of State Sector (A)			4		440		

B. Central Sector

Sl. No.	Name of Utility	Name of Station	Unit No.	Year of Comm.	Cap. (MW)	Completion Schedule (Actual / Targeted)	Present status / Expected Date of Completion
	NIL						
Total Central Sector (B)			0		0		
Grand Total (A+B)			4		440		

RFD Target for R&M Works during 2012-13

Appendix – II B
(Page 1 /1)

A. State Sector

Status as on 30-09-2012

Sl. No.	Name of Utility	Name of Station	Unit No.	Year of Commissioning	Capacity (MW)	Completion Schedule (Actual / Targeted)	Present Status
1	UPRUVNL	Obra	7		100	2012-13 (Target)	E&C works started on 03.06.2011. completion expected by Nov., 2012.
2	WB	DPL	6		110	2012-13 (Target)	Synchronised on 07.05.2012.
3	JSEB	Patratu	9		110	2012-13 (Target)	R&M is under progress by M/s BHEL. Synchronisation of U-9 is expected by Jan.,2013.
4	JSEB	Patratu	10		110	2012-13 (Target)	Test synchronised on 24.05.2012
Total of State Sector (A)			4		430		

B. Central Sector

Sl. No.	Name of Utility	Name of Station	Unit No.	Year of Commissioning	Capacity (MW)	Completion Schedule (Actual / Targeted)	Present Status
1	NTPC	Tanda	2	1989	110	2012-13 (Target)	Synchronised.
2	NTPC	Kawas GT-1A	1	1992	106		Awarded to M/s GE on 23.03.2012. Work in progress.
Total Central Sector (B)			2		216		
Total of R&M (A+B)			6		646		
Grand Total (LE + R&M)			10		1086		

Status of LE works of Uttar Pradesh (UPRVUNL) Thermal Power Station (As on 30.09.2012)

A	Project Details	Description	Broad Scope of Works
			Supply started
1	Name of Power Station	OBRA	i) Boiler : 100%Replacement damaged ceiling structure, Refractory and thermal insulation- Replacement 180 nos. HP and LP valves, 200 nos. route valves, replacement/repair of fuel oil system valves, replacement of 8 nos. spray control valves and piping for Desuper heater in super heater and reheater, replacement of 4 nos. control valves, 2 nos. drum safety valves, 2 nos. reheater safety valves, all other safety valves superheater will be serviced. 100%Replacement of valves in PRDS system. .Skin Casing, Hangers & supports of Main steam pipe. 100% alignment of water walls. Correction of Buck stays, guide channels, vertical channel, corner attachment from 8M to 48M, replacement of all peep holes & man holes. 100% Replacement of Furnace walls, Down Flow pipes, Riser Tubes, Economizer. O/H of Boiler Drum & Internals, 100% Replacement of Super Heaters, Attemperator, Re-Heater, Sling Rods and supports, Spray Water piping, O/H of PRDS system. Replacement of baskets, seals and sector plates gear boxes of Air and Flue gas system. O/H & repair of damaged parts of FD fans. 100% Replacement of ID fans with 10% enhanced capacity. Cold air ducts, Hot air ducts, Flue gas ducts, Compensators in cold air ducts, Compensators in cold air ducts, Sampling coolers, Dampers and gates, Scanner air fan, Suit blowing system, wall blowers. O/H & Replacement of damaged parts of P.A. Fans., 100% Replacement of Raw coal scrapper feeder (2 Nos.), Wind box & Coal burners of coal burners & Coal dust pipes and bends with ceramic lining of Coal Milling and firing system. Complete O/H of Oil firing system: Replacement of Control & Instrumentation: Boiler Controls, FSSS (BMS), Secondary Air Damper Control Panels (SADC), Soot Blower Control Panels (SBC Panels), Cables between consoles and DCS cabinets, Interconnecting cables between DCS cabinets, Auto Control Loops for Boiler (maxDNA based).
2	Unit No. & capacity	U-10 (200 MW)	
3	Make		
	i) Boiler	BHEL	
	ii) TG.	BHEL	
4	Date of commissioning	01/1979	
B. RLA Study / Consultancy			
Description		Boiler	TG.
Estimated Cost (Rs in Cr)		1 crore for RLA of the unit has been covered along with the uprating of units (200 MW to 216 MW)	
Executing Agency		BHEL	
Expected/Actual start of work			
Completion date			
Actual Expenditure (Rs in Cr)			
			ii) TG : HP Turbine:: Fully bladed new rotor,- New blading set complete stages, Complete machined new shaft, Inner casing including guide blades sealing arrangement, safety governor, fasteners, Complete new modernized outer casing IP Turbine: Fully bladed new rotor, New blading set complete stages, Complete machined new shaft, Inner casing, sealing arrangement, fasteners, Complete set of diaphragms LP Turbine: Fully bladed new rotor, New blading set complete stages, Complete machined new shaft, Complete set of diaphragms. Inner casing, materials for modernisation of LP outer casing, coupling, sealing arrangement, fasteners, Rotor and diaphragms lifting device for units (9 to 13). Jacking oil pump (1 set). Electro hydraulic governing system (1 set). Auxiliary equipment: Ejectors, Condenser tubes 100% replacement Generator(1 set). : Stator winding bars and winding, Supply of end packets and shunts for stator and assembly, Generator C&I, Gas analyzer cabinet, Generator instrumentation cabinet, Conductivity instruments, Moisture measurement system, Group cables for generator C&I area for connection between junction boxes and cabinets, between cabinets, between C&I cabinets and UCB. TG Auxiliaries: Gland steam condenser: Supply of cupronickel tube bundles considered Supply of: Main oil cooler, L.P. heater 1-4 of cupronickel tube bundles, Deaerator, Pipes and supports cooling water line of MOC, Valves upto 65 mm, insulation and cladding, Spares for D/C, A/C oil pumps, S.O.P, Condensate Extraction water pumps, Bearing gear spares, Boiler Feed Pump: BFP cartridge (1 No), Hydraulic coupling R16K (2 Nos), RC valve (3 Nos), Connecting coupling strainer & warm up valve, (3 Nos), Drip pump valves & fittings (2 sets), Warm up valve & safety valves for BFP (1set). O/H of Booster Pump & H.P.Heters: Turbine supervisory instrument including field sensors, cables, electronics. Auto Control Loops for Turbo-Generator & Re-generative Area

C	R&M/ LE Works		iii) BOP : Capping Amount of Rs. 60 crores has been of BOP for all the five units of 5x200MW. Station C&I Equipment, SWAS system, Flue gas analysers, Instrumentation cables for auto loop & measurement loops, Max DNA based DCS panels for measurement loops, Back-up control desk (for auto control & measurement loops) for critical operation for safe shut down of unit), Alarm system excepting for generator area., Sequence of event recording SOE (integral part of DCS), Interlocks & protection for fans & BFP (maxDNA based system), Static excitation system: Thruster cubicle, Digital regulation panel, Field breaker cubicle, Field flashing cubicle, Trunking cubicle, Mandatory spares.
1	Executing Agency Boiler/ TG.	BHEL	
2	No. of Activities Boiler/ TG.		
3	Zero date	20.6.2006	
4	Expected/Actual date of Start of work	22.03.2012 (A)	
5	Expected/Actual date of Completion of work	April, 2013 (E)	
6	Estimated Cost (Rs in Cr)	Rs 1635 crores for units (9 to 13) 5x200 MW units.	
7	Actual Expenditure incurred (Rs in Cr)	Rs 942 Cr (On unit 9-13)	

Status of LE works of Uttar Pradesh (UPRVUNL) Thermal Power Station (As on 30.09.2012)

A	Project Details	Description	Broad Scope of Works
			Work under progress
1	Name of Power Station	OBRA	i) Boiler : 100%Replacement damaged ceiling structure, Refractory and thermal insulation- Replacement 180 nos. HP and LP valves, 200 nos. route valves, replacement/repair of fuel oil system valves, replacement of 8 nos. spray control valves and piping for Desuper heater in super heater and reheater, replacement of 4 nos. control valves, 2 nos. drum safety valves, 2 nos. reheater safety valves, all other safety valves superheater will be serviced. 100%Replacement of valves in PRDS system. .Skin Casing, Hangers & supports of Main steam pipe. 100% alignment of water walls. Correction of Buck stays, guide channels, vertical channel, corner attachment from 8M to 48M, replacement of all peep holes & man holes. 100% Replacement of Furnace walls, Down Flow pipes, Riser Tubes, Economizer. O/H of Boiler Drum & Internals, 100% Replacement of Super Heaters, Attemperator, Re-Heater, Sling Rods and supports, Spray Water piping, O/H of PRDS system. Replacement of baskets, seals and sector plates gear boxes of Air and Flue gas system. O/H & repair of damaged parts of FD fans. 100% Replacement of ID fans with 10% enhanced capacity. Cold air ducts, Hot air ducts, Flue gas ducts, Compensators in cold air ducts, Compensators in cold air ducts, Sampling coolers, Dampers and gates, Scanner air fan, Suit blowing system, wall blowers. O/H & Replacement of damaged parts of P.A. Fans., 100% Replacement of Raw coal scrapper feeder (2 Nos.), Wind box & Coal burners of coal burners & Coal dust pipes and bends with ceramic lining of Coal Milling and firing system. Complete O/H of Oil firing system: Replacement of Control & Instrumentation: Boiler Controls, FSSS (BMS), Secondary Air Damper Control Panels (SADC), Soot Blower Control Panels (SBC Panels), Cables between consoles and DCS cabinets, Interconnecting cables between DCS cabinets, Auto Control Loops for Boiler (maxDNA based).
2	Unit No. & capacity	U-11 (200 MW)	
3	Make		
	i) Boiler	BHEL	
	ii) TG.	BHEL	
4	Date of commissioning	01/1979	
B. RLA Study / Consultancy			
	Description	Boiler TG.	ii) TG :
	Estimated Cost (Rs in Cr)	1 crore for RLA of the unit has been covered along with the uprating of units (200 MW to 216 MW)	TG HP Turbine:: Fully bladed new rotor,- New blading set complete stages, Complete machined new shaft, Inner casing including guide blades sealing arrangement, safety governor, fasteners, Complete new modernized outer casing IP Turbine: Fully bladed new rotor, New blading set complete stages, Complete machined new shaft, Inner casing, sealing arrangement, fasteners, Complete set of diaphragms LP Turbine: Fully bladed new rotor, New blading set complete stages, Complete machined new shaft, Complete set of diaphragms. Inner casing, materials for modernisation of LP outer casing, coupling, sealing arrangement, fasteners, Rotor and diaphragms lifting device for units (9 to 13). Jacking oil pump (1 set). Electro hydraulic governing system (1 set). Auxiliary equipment: Ejectors, Condenser tubes 100% replacement Generator(1 set). : Stator winding bars and winding, Supply of end packets and shunts for stator and assembly, Generator C&I, Gas analyzer cabinet, Generator instrumentation cabinet, Conductivity instruments, Moisture measurement system, Group cables for generator C&I area for connection between junction boxes and cabinets, between cabinets, between C&I cabinets and UCB. TG Auxiliaries: Gland steam condenser: Supply of cupronickel tube bundles considered Supply of: Main oil cooler, L.P. heater 1-4 of cupronickel tube bundles, Deaerator, Pipes and supports cooling water line of MOC, Valves upto 65 mm, insulation and cladding, Spares for D/C, A/C oil pumps, S.O.P, Condensate Extraction water pumps, Bearing gear spares, Boiler Feed Pump: BFP cartridge (1 No), Hydraulic coupling R16K (2 Nos), RC valve (3 Nos), Connecting coupling strainer & warm up valve, (3 Nos), Drip pump valves & fittings (2 sets), Warm up valve & safety valves for BFP (1set). O/H of Booster Pump & H.P.Heters: Turbine supervisory instrument including field sensors, cables, electronics. Auto Control Loops for Turbo-Generator & Re-generative Area
	Executing Agency	BHEL BHEL	
	Expected/ Actual start of work		
	Completion date		
	Actual Expenditure (Rs in Cr)		

C	R&M/ LE Works		iii) BOP :
1	Executing Agency Boiler/ TG.	BHEL	Capping Amount of Rs. 60 crores has been of BOP for all the five units of 200MW. Station C&I Equipment, SWAS system, Flue gas analysers, Instrumentation cables for auto loop & measurement loops, Max DNA based DCS panels for measurement loops, Back-up control desk (for auto control & measurement loops) for critical operation for safe shut down of unit), Alarm system excepting for generator area., Sequence of event recording SOE (integral part of DCS), Interlocks & protection for fans & BFP (maxDNA based system), Static excitation system: Thyristor cubicle, Digital regulation panel, Field breaker cubicle, Field flashing cubicle, Trunking cubicle, Mandatory spares.
2	No. of Activities Boiler/ TG.		
3	Zero date	20.6.2006	
4	Date of Start of work	13.07.2011	
5	Expected/Actual date of Completion of work	November, 2013 (E)	
6	Estimated Cost (Rs in Cr)	Rs 1635 crores for units (9 to 13)	
7	Actual Expenditure incurred (Rs in Cr)	Rs 942 Cr (On unit 9-13)	

Dismantling of boiler completed.

Complete refurbishment of boiler & ESP and Overhauling of turbine (at existing capacity)

Status of LE works of Uttar Pradesh (UPRVUNL) Thermal Power Station (As on 30.09.2012)

A	Project Details	Description	Broad Scope of Works
			Supply started
1	Name of Power Station	OBRA	i) Boiler : 100%Replacement damaged ceiling structure, Refractory and thermal insulation- Replacement 180 nos. HP and LP valves, 200 nos. route valves, replacement/repair of fuel oil system valves, replacement of 8 nos. spray control valves and piping for Desuper heater in super heater and reheater, replacement of 4 nos. control valves, 2 nos. drum safety valves, 2 nos. reheater safety valves, all other safety valves superheater will be serviced. 100%Replacement of valves in PRDS system. .Skin Casing, Hangers & supports of Main steam pipe. 100% alignment of water walls. Correction of Buck stays, guide channels, vertical channel, corner attachment from 8M to 48M, replacement of all peep holes & man holes. 100% Replacement of Furnace walls, Down Flow pipes, Riser Tubes, O/H of Boiler Drum & Internals, Economizer., 100% Replacement of Super Heaters, Attemperator, Re-Heater, Sling Rods and supports, Spray Water piping, O/H of PRDS system. Replacement of baskets, seals and sector plates gear boxes of Air and Flue gas system. O/H & repair of damaged parts of FD fans. 100% Replacement of ID fans with 10% enhanced capacity. Cold air ducts, Hot air ducts, Flue gas ducts, Compensators in cold air ducts, Compensators in cold air ducts, Sampling coolers, Dampers and gates, Scanner air fan. O/H & Replacement of damaged parts of P.A. Fans., Suit blowing system, wall blowers. 100% Replacement of Raw coal scrapper feeder (2 Nos.), Wind box & Coal burners of coal burners & Coal dust pipes and bends with ceramic lining of Coal Milling and firing system. Complete O/H of Oil firing system: Replacement of Control & Instrumentation: Boiler Controls, FSSS (BMS), Secondary Air Damper Control Panels (SADC), Soot Blower Control Panels (SBC Panels), Cables between consoles and DCS cabinets, Interconnecting cables between DCS cabinets, Auto Control Loops for Boiler (maxDNA based).
2	Unit No. & capacity	U-12 (200 MW)	
3	Make		
	i) Boiler	BHEL	
	ii) TG.	BHEL	
4	Date of commissioning	01/1979	
B. RLA Study / Consultancy			
	Description	Boiler TG.	ii) TG :
	Estimated Cost (Rs in Cr)	1 crore for RLA of the unit has been covered along with the uprating of units (200 MW to 216 MW)	HP Turbine:: Fully bladed new rotor,- New blading set complete stages, Complete machined new shaft, Inner casing including guide blades sealing arrangement, safety governor, fasteners, Complete new modernized outer casing IP Turbine: Fully bladed new rotor, New blading set complete stages, Complete machined new shaft, Inner casing, sealing arrangement, fasteners, Complete set of diaphragms LP Turbine: Fully bladed new rotor, New blading set complete stages, Complete machined new shaft, Complete set of diaphragms. Inner casing, materials for modernisation of LP outer casing, coupling, sealing arrangement, fasteners, Rotor and diaphragms lifting device for units (9 to 13). Jacking oil pump (1 set). Electro hydraulic governing system (1 set). Auxiliary equipment: Ejectors, Condenser tubes 100% replacement Generator(1 set). : Set of accumulator (1 set), Rewinding of generators rotors (1 No), Retaining ring (2 Nos), Generator C&I, Gas analyzer cabinet, Generator instrumentation cabinet, Conductivity instruments, Moisture measurement system, Group cables for generator C&I area for connection between junction boxes and cabinets, between cabinets, between C&I cabinets and UCB. TG Auxiliaries: Gland steam condenser: Supply of cupronickel tube bundles considered Supply of: Main oil cooler, L.P. heater 1-4 of cupronickel tube bundles, Deaerator, Pipes and supports cooling water line of MOC, Valves upto 65 mm, insulation and cladding, Spares for D/C, A/C oil pumps, S.O.P, Condensate Extraction water pumps, Bearing gear spares, Boiler Feed Pump: BFP cartridge (1 No), Hydraulic coupling R16K (2 Nos), RC valve (3 Nos), Connecting coupling strainer & warm up valve, (3 Nos), Drip pump valves & fittings (2 sets), Warm up valve & safety valves for BFP (1set). O/H of Booster Pump & H.P.Heters: Turbine supervisory instrument including field sensors, cables, electronics. Auto Control Loops for Turbo-Generator & Re-generative Area
	Executing Agency	BHEL BHEL	
	Expected/ Actual start of work		
	Completion date		
	Actual Expenditure (Rs in Cr)		

C	R&M/ LE Works		iii) BOP :
1	Executing Agency Boiler/ TG.	BHEL	Capping Amount of Rs. 60 crores has been of BOP for all the five units of 5x200MW. Station C&I Equipment, SWAS system, Flue gas analysers, Instrumentation cables for auto loop & measurement loops, Max DNA based DCS panels for measurement loops, Back-up control desk (for auto control & measurement loops) for critical operation for safe shut down of unit), Alarm system excepting for generator area., Sequence of event recording SOE (integral part of DCS), Interlocks & protection for fans & BFP (maxDNA based system), Static excitation system: Thyristor cubicle, Digital regulation panel, Field breaker cubicle, Field flashing cubicle, Trunking cubicle, Mandatory spares.
2	No. of Activities Boiler/ TG.		
3	Zero date	20.6.2006	
4	Expected Date of Start of works	*	
5	Expected date of Completion of works		
6	Estimated Cost (Rs in Cr)	Rs 1635 crores for units (9 to 13) 5x200 MW units.	
7	Actual Expenditure incurred (Rs in Cr)	Rs 942 Cr (On unit 9-13)	

***After completion of R&M / LE works of boiler and O/H of turbines of units 10 &11 at rated capacity. Thereafter Unit 12 & 13 will be taken up.**

Status of LE works of Uttar Pradesh (UPRVUNL) Thermal Power Station (As on 30.09.2012)

A	Project Details	Description	Broad Scope of Works
			Supply started
1	Name of Power Station	OBRA	i) Boiler : 100%Replacement damaged ceiling structure, Refractory and thermal insulation- Replacement 180 nos. HP and LP valves, 200 nos. route valves, replacement/repair of fuel oil system valves, replacement of 8 nos. spray control valves and piping for Desuper heater in super heater and reheater, replacement of 4 nos. control valves, 2 nos. drum safety valves, 2 nos. reheater safety valves, all other safety valves superheater will be serviced. 100%Replacement of valves in PRDS system. .Skin Casing, Hangers & supports of Main steam pipe. 100% alignment of water walls. Correction of Buck stays, guide channels, vertical channel, corner attachment from 8M to 48M, replacement of all peep holes & man holes. 100% Replacement of Furnace walls, Down Flow pipes, Riser Tubes, O/H of Boiler Drum & Internals, Economizer., 100% Replacement of Super Heaters, Attemperator, Re-Heater, Sling Rods and supports, Spray Water piping, O/H of PRDS system. Replacement of baskets, seals and sector plates gear boxes of Air and Flue gas system. O/H & repair of damaged parts of FD fans. 100% Replacement of ID fans with 10% enhanced capacity. Cold air ducts, Hot air ducts, Flue gas ducts, Compensators in cold air ducts, Compensators in cold air ducts, Sampling coolers, Dampers and gates, Scanner air fan. O/H & Replacement of damaged parts of P.A. Fans., Suit blowing system, wall blowers. 100% Replacement of Raw coal scrapper feeder (2 Nos.), Wind box & Coal burners of coal burners & Coal dust pipes and bends with ceramic lining of Coal Milling and firing system. Complete O/H of Oil firing system: Replacement of Control & Instrumentation: Boiler Controls, FSSS (BMS), Secondary Air Damper Control Panels (SADC), Soot Blower Control Panels (SBC Panels), Cables between consoles and DCS cabinets, Interconnecting cables between DCS cabinets, Auto Control Loops for Boiler (maxDNA based).
2	Unit No. & capacity	U-13 (200 MW) Upgradation to 216 MW	
3	Make		
	i) Boiler	BHEL	
	ii) TG.	BHEL	
4	Date of commissioning	01/1979	
B. RLA Study / Consultancy			
Description	Boiler	TG.	ii) TG : HP Turbine:: Fully bladed new rotor,- New blading set complete stages, Complete machined new shaft, Inner casing including guide blades sealing arrangement, safety governor, fasteners, Complete new modernized outer casing IP Turbine: Fully bladed new rotor, New blading set complete stages, Complete machined new shaft, Inner casing, sealing arrangement, fasteners, Complete set of diaphragms LP Turbine: Fully bladed new rotor, New blading set complete stages, Complete machined new shaft, Complete set of diaphragms. Inner casing, materials for modernisation of LP outer casing, coupling, sealing arrangement, fasteners, Rotor and diaphragms lifting device for units (9 to 13). Jacking oil pump (1 set). Electro hydraulic governing system (1 set). Auxiliary equipment: Ejectors, Condenser tubes 100% replacement Generator(1 set). : Set of accumulator (1 set), Rewinding of generators rotors (1 No), Retaining ring (2 Nos), Generator C&I, Gas analyzer cabinet, Generator instrumentation cabinet, Conductivity instruments, Moisture measurement system, Group cables for generator C&I area for connection between junction boxes and cabinets, between cabinets, between C&I cabinets and UCB. TG Auxiliaries: Gland steam condenser: Supply of cupronickel tube bundles considered Supply of: Main oil cooler, L.P. heater 1-4 of cupronickel tube bundles, Deaerator, Pipes and supports cooling water line of MOC, Valves upto 65 mm, insulation and cladding, Spares for D/C, A/C oil pumps, S.O.P, Condensate Extraction water pumps, Bearing gear spares, Boiler Feed Pump: BFP cartridge (1 No), Hydraulic coupling R16K (2 Nos), RC valve (3 Nos), Connecting coupling strainer & warm up valve, (3 Nos), Drip pump valves & fittings (2 sets), Warm up valve & safety valves for BFP (1set). O/H of Booster Pump & H.P.Heters: Turbine supervisory instrument including field sensors, cables, electronics. Auto Control Loops for Turbo-Generator & Re-generative Area
Estimated Cost (Rs in Cr)	1 crore for RLA of the unit has been covered along with the uprating of units (200 MW to 216 MW)		
Executing Agency	BHEL	BHEL	
Expected/ Actual start of work			
Completion date			
Actual Expenditure (Rs in Cr)			

C	R&M/ LE Works		iii) BOP : Capping Amount of Rs. 60 crores has been of BOP for all the five units of 5x200MW. Station C&I Equipment, SWAS system, Flue gas analysers, Instrumentation cables for auto loop & measurement loops, Max DNA based DCS panels for measurement loops, Back-up control desk (for auto control & measurement loops) for critical operation for safe shut down of unit), Alarm system excepting for generator area., Sequence of event recording SOE (integral part of DCS), Interlocks & protection for fans & BFP (maxDNA based system), Static excitation system: Thyristor cubicle, Digital regulation panel, Field breaker cubicle, Field flashing cubicle, Trunking cubicle, Mandatory spares.
1	Executing Agency Boiler/ TG.	BHEL	
2	No. of Activities Boiler/ TG.		
3	Zero date	20.6.2006	
4	Expected date of Start of work	*	
5	Expected date of Completion of work		
6	Estimated Cost (Rs in Cr)	Rs 1635 crores for units (9 to 13)	
7	Actual Expenditure incurred (Rs in Cr)	Rs 942 Cr (On unit 9-13)	

***After completion of R&M / LE works of boiler and O/H of turbines of units 10 &11 at rated capacity. Thereafter Unit 12 & 13 will be taken up.**

Status of LE works of Uttar Pradesh (UPRVUNL) Thermal Power Station (As on 30.09.2012)

A	Project Details	Description	Broad Scope of Works	
			Order Placed and Supply of steel has started.	
1	Name of Power Station	Harduaganj	i) Boiler : Conversion of Tangent type of boiler into Membrane type boiler. Conversion of Ball mills into Bowl Mills.	
2	Unit No. & capacity	U-7 (105/110 MW) Upgradation to 120MW		
3	Make			
	i) Boiler	BHEL		
	ii) TG.	BHEL		
4	Date of commissioning	03/1978		
B. RLA Study / Consultancy (NTPC has been appointed for consultancy works)				
Description		Boiler	TG.	ii) TG : Replacement of old HP Turbine with New HP Turbine along with Inner casing, Diaphragm, Rotor (with blades). Replacement of old Inner MP casing with New Inner MP casing, Diaphragm and Rotor (with blades). Modernisation of LP casing, New Diaphragm and Rotor (with blades). Replacement of old governing system with new Electronic- Hydroelectric governing system. Replacement of old 125 MVA transformer with new 150 MVA transformer
Estimated Cost (Rs in Cr)				
Executing Agency				
Expected/Actual start of work				
Completion date				
Actual Expenditure (Rs in Cr)				
C	R&M/ LE Works			iii) BOP : New max DNA C&I system in place of old C&I system. BOP works for almost complete power station. Note: A capping amount of Rs 9.0 crores has been kept (will be paid on mutual agreement between BHEL and UPRVUNL on the bases of RLA studies will be carried out BHEL. Supply of materials/equipments has been started.
1	Executing Agency Boiler/ TG.		BHEL	
2	No. of Activities Boiler/ TG.			
3	Zero date			
4	Date of Start of work		March, 2011	
5	Expected Date of Completion		December,2012	
6	Estimated Cost (Rs in Cr)		Rs 290.0 Cr	
7	Actual Expenditure incurred (Rs in Cr)		Advance payment has been made	

Present Status : Progress of work is very slow. UPRVUNL apprehended that the completion of work may further be delayed.

Status of LE works of Uttar Pradesh (UPRVUNL) Thermal Power Station (As on 30.09.2012)

A	Project Details	Description	Broad Scope of Works
			Order Placed
1	Name of Power Station	Parichha	i) Boiler : Modification in Economiser system along with inlet/outlet headers & elements. Replacement of water wall panels including burner panel and radiant roof tubes. Superheater System: Replacement of Steam cooled wall tube (fully), LTSH coils and terminal tubes (fully), Radial Roof tubes 1 st pass & Roof panels of 2 nd pass (fully). Replacement of De-Superheater System, Re-heater coils & headers. Replacement of All conventional valves of size below 65mm. Replacement of all safety valves, escape pipes, drum safety valves, MS safety valves, CRH & HRH safety valves, Soot blower lines, Soot blower lines safety valve along with SB control station and thermal drain system to suit the new C&I system Replacement of volumetric feeders with Microprocessor based dual belt gravimetric feeders. Replacement of Seal air system for Pulverisers. Replacement of existing coal pipes to suit the XRP 623 mills. Replacement of existing wind boxes with HEA igniters. Piping, valves & fittings of HFO/ LDO system will be redesign and refurbished to suit the NEW C&I system. Replacement of existing Air cooled oil guns. Replacement of existing hot air and cold air ducting, fuel gas ducting. Replacement of existing Refractory and insulation wool. Replacement of soot blowers system along with soot blowers lines, control station, drain station and valves. Replacement of Hangers and supports, Critical piping for PRDS along with piping, valves, Auxiliary steam piping, Blow down piping. Replacement of Air preheater (2 Nos. per boiler) Refurbishment of existing FD fan & , P A fan (2 Nos each per boiler). Replacement of ID fans (3 Nos per boiler) along with hydraulic coupling. Replacement of seal Air fans (2 Nos per boiler) along with motor New C&I system for boiler and its auxiliaries.
2	Unit No. & capacity	1 (110 MW)	
3	Make		
	i) Boiler	BHEL	
	ii) TG.	BHEL	
4	Date of commissioning	03/1984	
B.	RLA Study / Consultancy		(NTPC has been appointed for consultancy works)
	Description	Boiler	TG.
	Estimated Cost (Rs in Cr)		
	Executing Agency		
	Expected/ Actual start of work		
	Completion date		
	Actual Expenditure (Rs in Cr)		
C	R&M/ LE Works		iii) BOP :
1	Executing Agency Boiler/ TG.	BHEL	CHP: Replacement 2 Nos. Plough feeders, 13 Nos Vibrofeeders, 13 Nos rack & pinion gates, bunker sealing arrangement at bunker floor, belt scrapers -17 Nos, idlers, pulleys, 1 No. ring granulator, transfer chutes, surge hopper in crusher house with liners, gear box of conveyor drive, strengthening of structure for all conveyors, safety switches, pull card, belt sway, for all conveyors. AHP: Supply, fabrication and erection of bottom ash hoppers, structure for bottom ash hoppers along with refractory, 4-way solenoid valves, slurry pipe (150 M), L P water piping with fitting, air piping with fitting motorized valves. Replacement of 2 Nos ash slurry disposal pipe lines (1KM). Complete civil, electrical, and C&I work for CHP & AHP. DM Plant: Replacement of alkali storage tank, acid storage tank, acid transfer pump (1 No), alkali transfer pump (1 No), anion pumps (4 Nos), degasser pumps (4 Nos), degasser blowers (2 Nos), acid & alkali dosing system, pipes. Compressed Air system: Replacement of 4 Nos instrument air compressors, 4 Nos air dryers with pipings. Fire protection system: New Fire alarm system, Foam pourer system for FO/LDO tanks. Electrical system: Replacement of 7 Nos ABCB breakers with SF-6 breaker, Replacement of 11 Nos Isolators, 6 Nos lightning arrestors
2	No. of Activities Boiler/ TG.		
3	Zero date		
4	Expected Date of Start of work		
5	Expected Date of Completion of work		
6	Estimated Cost (Rs in Cr)	Rs 444.90 Cr including Taxes & duties, freight & Insurance (for unit 1 & 2)	
7	Actual Expenditure incurred (Rs in Cr)		

*UPRVUNL has informed telephonically that they have awarded study for techno-economical viability of the LE works to the consultant M/s Evonik. The consultant has submitted the report which shall be examined by UPRVUNL authority.

The approval of Govt. of U.P. for R&M scheme is under progress by Energy Task Force.

Status of LE works of Uttar Pradesh (UPRVUNL) Thermal Power Station (As on 30.09.2012)

A	Project Details	Description	Broad Scope of Works
			Order Placed
1	Name of Power Station	Parichha	i) Boiler : Modification in Economiser system along with inlet/outlet headers & elements. Replacement of water wall panels including burner panel and radiant roof tubes. Superheater System: Replacement of Steam cooled wall tube (fully), LTSH coils and terminal tubes (fully), Radial Roof tubes 1 st pass & Roof panels of 2 nd pass (fully). Replacement of De-Superheater System, Re-heater coils & headers. Replacement of All conventional valves of size below 65mm. Replacement of all safety valves, escape pipes, drum safety valves, MS safety valves, CRH & HRH safety valves, Soot blower lines, Soot blower lines safety valve along with SB control station and thermal drain system to suit the new C&I system Replacement of volumetric feeders with Microprocessor based dual belt gravimetric feeders. Replacement of Seal air system for Pulverisers. Replacement of existing coal pipes to suit the XRP 623 mills. Replacement of existing wind boxes with HEA igniters. Piping, valves & fittings of HFO/ LDO system will be redesign and refurbished to suit the NEW C&I system. Replacement of existing Air cooled oil guns. Replacement of existing hot air and cold air ducting, fuel gas ducting. Replacement of existing Refractory and insulation wool. Replacement of soot blowers system along with soot blowers lines, control station, drain station and valves. Replacement of Hangers and supports, Critical piping for PRDS along with piping, valves, Auxiliary steam piping, Blow down piping. Replacement of Air preheater (2 Nos. per boiler) Refurbishment of existing FD fan & , P A fan (2 Nos each per boiler). Replacement of ID fans (3 Nos per boiler) along with hydraulic coupling. Replacement of seal Air fans (2 Nos per boiler) along with motorNew C&I system for boiler and its auxiliaries.
2	Unit No. & capacity	2 (110 MW)	
3	Make		
	i) Boiler	BHEL	
	ii) TG.	BHEL	
4	Date of commissioning	02/1985	
			(NTPC has been appointed for consultancy works)
			ii) TG :

B.	RLA Study / Consultancy		
Description	Boiler	G.	ii) TG : Replacement of H.P. turbine along with inner casing, rotor with improved design bladings, improved design casing, improved gland boxes along with new gland rings. Replacement of M.P. inner casing, rotor with improved design bladings, improved gland boxes along with new gland rings. Modernisation of L.P. casing and replacement of old diaphragm with new diaphragm and rotor. Replacement of old governing system with new electronic governing system.
Estimated Cost (Rs in Cr)			
Executing Agency			
Expected/ Actual start of work			
Completion date			
Actual Expenditure (Rs in Cr)			

C	R&M/ LE Works		iii) BOP : CHP: Replacement 2 Nos. Plough feeders, 13 Nos Vibrofeeders, 13 Nos rack & pinion gates, bunker sealing arrangement at bunker floor, belt scrapers -17 Nos, idlers, pulleys, 1 No. ring granulator, transfer chutes, surge hopper in crusher house with liners, gear box of conveyor drive, strengthening of structure for all conveyors, safety switches, pull card, belt sway, for all conveyors. AHP: Supply, fabrication and erection of bottom ash hoppers, structure for bottom ash hoppers along with refractory, 4-way solenoid valves, slurry pipe(150 M), L P water piping with fitting, air piping with fitting motorized valves. Replacement of 2 Nos ash slurry disposal pipe lines (1KM). Complete civil, electrical, and C&I work for CHP & AHP. DM Plant: Replacement of alkali storage tank, acid storage tank, acid transfer pump(1 No), alkali transfer pump(1No), anion pumps (4 Nos), degasser pumps (4 Nos), degasser blowers (2 Nos), acid & alkali dosing system, pipes. Compressed Air system: Replacement of 4 Nos instrument air compressors, 4 Nos air dryers with pipings. Fire protection system: New Fire alarm system, Foam pourer system for FO/LDO tanks. Electrical system: Replacement of 7 Nos ABCB breakers with SF-6 breaker, Replacement of 11 Nos Isolators, 6 Nos lightening arrestors
1	Executing Agency Boiler/ TG.		
2	No. of Activities Boiler/ TG.		
3	Zero date		
4	Expected date of Start of work.		
5	Expected Date of Completion of work.		
6	Estimated Cost (Rs in Cr)	Rs 444.90 Cr including Taxes & duties, freight & Insurance (for unit 1 & 2)	
7	Actual Expenditure incurred (Rs in Cr)		

- UPRVUNL has informed telephonically that they have awarded study for techno-economical viability of the LE works to the consultant M/s Evonik.
- The approval of Govt. of U.P. for R&M scheme is under progress by Energy Task Force.

Status of LE works of Punjab State Power Corporation Ltd. (PSPCL)

(As on 30.09.2012)

A	Project Details	Description	Broad Scope of Works
			Order Placed,
1	Name of Power Station	Bathinda	i) Boiler : Complete replacement of existing indirect fired boiler with direct fired boiler. Replacement of air heaters, flue gas ducting, fuel firing system, milling system, upgradation for direct firing & fans etc. After dismantlement work of Boiler, erection work of Boiler started from 18.06.2010.
2	Unit No. & capacity	U-3 (110 MW) Upgradation to 120 MW	
3	Make		
	i) Boiler	BHEL	
	ii) TG.	BHEL	
4	Date of commissioning	29.7.1978	
B. RLA Study / Consultancy			
	Description	Boiler TG.	ii) TG : Retrofitting of HP, IP & LP cylinders. Replacement of turbine gland sealing system, HP heaters, Control valves, RCV valves. 10% erection works of Turbine and Auxiliary and 10% civil works of Boiler, Turbine and BOP completed.
	Estimated Cost (Rs in Cr)	0.28	
	Executing Agency	CPRI, Bangalore	
	Actual start of work	02/01 02/01	
	Completion date	03/01 03/01	
	Actual Expenditure (Rs in Cr)	0.28	
C	R&M/ LE Works		iii) BOP : ESP rectification. Ash Handling System (Replacement of ash slurry pipe lines etc.) Complete replacement of Instrument & Controls. Electrical system : Replacement of existing 220 KV ABCB with SF-6 breakers. Replacement of Pneumatic 220 KV Isolators with motor operated mechanism, Replacement of 6.6 KV switchgear etc. Civil and structural works of boiler and auxiliaries.
1	Executing Agency Boiler/ TG.	BHEL	
2	No. of Activities Boiler/ TG.		
3	Zero date		
4	Actual Date of Start of work	14.01.2010	
5	Expected/Actual Date of Completion of work	05.08.2012(A)	
6	Estimated Cost (Rs in Cr)	483.95 Cr. For U-3 & 4	
7	Actual Expenditure incurred (Rs in Cr)	212 Cr.	

Order for R&M and uprating works on units – 3& 4 was placed on BHEL on Vide by PSPCL letter No 02/R&M-121 dated 14.11.2006. **Shut down taken from 14.01.2010. The unit is recommissioned on 05.08.2012**

A	Project Details	Description	Broad Scope of Works
			Order Placed
1	Name of Power Station	Bathinda	i) Boiler : Complete replacement of existing indirect fired boiler with direct fired boiler. Replacement of air heaters, flue gas ducting, fuel firing system, milling system, upgradation for direct firing & fans etc.
2	Unit No. & capacity	U-4 (110 MW) Upgradation to 120 MW	
3	Make		
	i) Boiler	BHEL	
	ii) TG.	BHEL	
4	Date of commissioning	31.01.1979	
B. RLA Study / Consultancy			
	Description	Boiler TG.	ii) TG : Retrofitting of HP, IP & LP cylinders. Replacement of turbine gland sealing system, HP heaters, Control valves, RCV valves.
	Estimated Cost (Rs in Cr)	0.28	
	Executing Agency	CPRI, Bangalore	
	Actual start of work	11/01 11/01	
	Completion date	12/01 12/01	
	Actual Expenditure (Rs in Cr)	0.32	
C	R&M/ LE Works		iii) BOP : ESP rectification. Ash Handling System (Replacement of ash slurry pipe lines etc.) Complete replacement of Instrument & Controls. Electrical system : Replacement of existing 220 KV ABCB with SF-6 breakers. Replacement of Pneumatic 220 KV Isolators with motor operated mechanism, Replacement of 6.6 KV switchgear etc. Civil and structural works of boiler and auxiliaries..
1	Executing Agency Boiler/ TG.	BHEL	
2	No. of Activities Boiler/ TG.		
3	Zero date		
4	Actual date of Start of work	5.11.2011	
5	Expected Date of Completion of work.	March,2013	
6	Estimated Cost (Rs in Cr)	483.95 Cr. For U-3 & 4	
7	Actual Expenditure incurred (Rs in Cr)	212 Cr.	

Order for R&M and uprating works on units – 3& 4 was placed on BHEL Vide PSPCL letter No 02/R&M-121 dated 14.11.2006. Shut down of Unit 4 taken on 5.11.2011. Dismantling works under progress.

Western Region

(Unit wise Broad Status of LE works)

There is no unit in western region where order for LE has been placed.

Eastern Region

(Unit wise Broad Status of LE works)

STATUS OF LE WORKS OF BIHAR (BSEB) THERMAL POWER STATION

(As on 30.09.2012)

A	Project details		Description		Broad status of various activities
1	Name of Power Station		Barauni TPS		Unit under shut down i) Boiler : The scope of works includes : 1) Strengthening of Structure(columns, backstays, ceiling girders, floor grills, hand grills, painting) 2) Furnace bottom sealing arrangements 3) Replacement of water walls, Superheater , Reheater, Soot blower system, Economizer, drain& vent piping, Hangers & Supports 4) Pulverized fuel firing system-Coal mills (5 no.), Coal feeders (5 no.), PF piping 5 no. sets), Seal air system (2x100%) 5) Fuel oil firing system 6) Supply/Replacement of Draft & Ducting System (APH,PA fan, FD fan, ID fan, Air and Flue gas ducting 7) Refurbishment of ESP ii) TG : The scope of works includes : 1) Refurbishment of HP,IP&LP turbine 2) Replacement/ Refurbishment of Shaft turning gear, Turbine governing system, lubricating oil coolers, Hydrogen coolers, Jacking oil pump, Seal oil coolers, Condenser, HP heaters, LP Heaters, Steam jet air ejector, Deaerator, BFP, CEP, Chimney Steam condenser and chimney exhaust fan, Turbine drain system valves, Hangers& Supports 3) Replacement/ Refurbishment of existing AVR with digital DVR incl. necessary modifications and existing excitation system incl. supply of necessary spares. 4) Complete overhauling of generator stator, Testing & varnishing of rotors and refurbishment of silica gel Hydrogen drier incl. supply of necessary spares. 5) Replacement/Supply/Testing of transformers, isolated phase Bus-duct of generator, Protection panels, 6.6 KV Switchgears, Bus changeover scheme ,LT Switchgears and Bus ducts, LT Motors, HT Motors , Station Lighting, Cabling, Earthing and Lighting Protection, Station Batteries & Chargers, Emergency AC Supply System, 132 KV Switchyard. 6) Installation of Distributed Digital Control Monitoring & Information System(DDCMIS) and other C&I Systems iii) BOP : The scope of works includes : 1) Supply and installation of Tube well system, CW System, Aeration System, DM Plant, Softening plant, CW Chlorination System, Air Compressors, Cooling towers, Misc. pump house, AC plant, Ventilation system, Fire fighting system 2) Replacement/ Refurbishment/Repair of Coal Handling Plant, Ash Handling Plant & F.O. Unloading Plant.
2	Unit No. & capacity		U-6 ,110MW		
3	Make		BHEL/ BHEL		
4	Date of Commissioning		U# 6-01.05.1983		
B	RLA Studies / Consultancy				
	Description	Boiler	TG		
1	Estimated Cost (Rs.Cr.)	Cost included in R&M work			
2	Executing Agency	BHEL	BHEL		
3	Exp / Act Start date	Boiler-4.5.06 Turbine – 18.5.06 Generator Stator-15.5.06			
4	Comple-tion date	Boiler-17.5.06 Turbine –5.6.06 Generator Stator- 17.5.06			
5	Actual Exp. (Rs.Cr.)	R&M work is being executed on turnkey basis and the cost against RLA is included in R&M cost.			
C	R&M / LE works				
1	Estimated cost for both units no.6&7 (Rs. Cr.)		Rs.572.16 Cr. (including the cost of RLA*)		
2	Executing Agency : Boiler/ TG		BHEL/ BHEL		
3	No. of activities : Boiler / TG				
4	Date of start / completion (E/A)		LOA:16/02/2010 Zero Date: 16/11/2009 (BHEL to confirm revised schedule)		
5	Actual Expenditure incurred (Rs. Cr.)		Rs. 303.37 Cr. (Incd Restoration of Unit-6)		

***Planning Commission vide their letter dated 16.11.2009 approved the revised cost estimates of Rs.1053 crores including consultancy charges under the Special Plan for Bihar for both BTPS & MTPS.**

*** Status : Dismantling works under progress**

STATUS OF LE WORKS OF BIHAR (BSEB) THERMAL POWER STATION

(As on 30.09.2012)

A	Project details	Description		Broad status of various activities
1	Name of Power Station	Barauni TPS		Unit under shut down. As proposed by BHEL, anticipated date of synchronization is 31 st March, 2012.
2	Unit No. & capacity	U- 7, 110MW		
3	Make : Boiler/ TG	BHEL/ BHEL		
4	Date of Commissioning	U# 7-31.03.1985		
B	RLA Studies / Consultancy			
	Description	Boiler	TG	i) Boiler : The scope of works includes : 1) Strengthening of Structure(columns, backstays, ceiling girders, floor grills, hand grills, painting) 2) Furnace bottom sealing arrangements 3) Replacement of water walls, Superheater ,Reheater, Soot blower system, Economizer, drain& vent piping, Hangers & Supports 4) Pulverized fuel firing system-Coal mills (5 no.), Coal feeders (5 no.), PF piping 5 no. sets), Seal air system (2x100%) 5) Fuel oil firing system 6) Supply/Replacement of Draft & Ducting System (APH,PA fan, FD fan, ID fan, Air and Flue gas ducting 7) Refurbishment of ESP ii) TG : The scope of works includes : 1) Refurbishment of HP,IP&LP turbine 2) Replacement/ Refurbishment of Shaft turning gear, Turbine governing system, lubricating oil coolers, Hydrogen coolers, Jacking oil pump, Seal oil coolers, Condenser, HP heaters, LP Heaters, Steam jet air ejector, Deaerator, BFP, CEP, Chimney Steam condenser and chimney exhaust fan, Turbine drain system valves, Hangers& Supports 3) Replacement/ Refurbishment of existing AVR with digital DVR incl. necessary modifications and existing excitation system incl. supply of necessary spares. 4) Complete overhauling of generator stator, Testing & varnishing of rotors and refurbishment of silica gel Hydrogen drier incl. supply of necessary spares. 5) Replacement/Supply/Testing of transformers, isolated phase Bus-duct of generator, Protection panels, 6.6 KV Switchgears, Bus changeover scheme ,LT Switchgears and Bus ducts, LT Motors, HT Motors, Station Lighting, Cabling, Earthling and Lighting Protection, Station Batteries & Chargers, Emergency AC Supply System, 132 KV Switchyard. 6) Installation Of Distributed Digital Control Monitoring& Information System(DDCMIS) and other C&I Systems iii) BOP : The scope of works includes : 1) Supply and installation of Tube well system, CW System, Aeration System, DM Plant, Softening plant, CW Chlorination System, Air Compressors, Cooling towers, Misc. pump house, AC plant, Ventilation system, Fire fighting system 2) Replacement/ Refurbishment/Repair of Coal Handling Plant, Ash Handling Plant & F.O. Unloading Plant. In the first phase of R&M, the restoration of BOP has also been done by BHEL.
1	Estimated Cost (Rs.Cr.)	Cost included in R&M work		
2	Executing Agency	BHEL	BHEL	
3	Exp/ Act Start date	Boiler-4.5.06 Turbine – 18.5.06 Generator Stator-15.5.06		
4	Completion date	Boiler-17.5.06 Turbine –5.6.06 Generator Stator- 17.5.06		
5	Actual Exp. (Rs.Cr.)	R&M work is being executed on turnkey basis and the cost against RLA is included in R&M cost.		
C	R&M / LE works			
1	Estimated cost for both units no.6&7 (Rs. Cr.)	Rs. 572.16 Cr. (including the cost of RLA*)		
2	Executing Agency : Boiler/ TG	BHEL/ BHEL		
3	No. of activities : Boiler / TG			
4	Date of start / completion (E/A)	LOA:16/02/2010 Zero Date: 16/11/2009 Mach, 2013.		
5	Actual Expenditure incurred (Rs. Cr.)	Rs. 303.37 Cr. (Incd Restoration of Unit-6)		

***Planning Commission vide their letter dated 16.11.2009 approved the revised cost estimates of Rs.1053 crores including consultancy charges under the Special Plan for Bihar for both BTPS & MTPS.**

STATUS:

As per the review meeting held at Barauni TPS on 29.0.2012, BHEL confirmed that the R&M of unit - 7 completed by March, 2013. BHEL has assured following schedule for unit – 7 of BTPS:

- Pressure part erection completion by 31.10.2012
- Detailed engineering of CHP works by 31.10.2012
- Air pre heater readiness by 15.01.2013
- ESP erection completion January, 2013
- Boiler light up by 15.02.2013
- TG on barring gear by 15.01.2013
- Synchronization of unit by 31.03.2013

STATUS OF LE/R&M WORKS OF BIHAR (KBUNL) THERMAL POWER STATION

(As on 30.09.2012)

A	Project details		Description		Broad status of various activities
1	Name of Power Station		Muzaffarpur TPS		Unit under shut down
2	Unit No. & capacity		U-1,110MW		
3	Make		BHEL/BHEL		
4	Date of Commissioning		31.03.1985		
B	RLA Studies / Consultancy				
	Description	Boiler	TG		i) Boiler: The scope of works includes : 1) Replacement/refurbishment of Furnace water walls, Economizer, Super Heater, Re heater, Steam cooled wall tubes, SH&RH DESH station, Soot blowing system, Drain and vents, Fuel preparation and firing system. 2) Fuel Oil Firing System. 3) Renovation/ Overhauling of APH &Draft system 4) Refurbishment of ESP 5) Replacement of Gates & dampers and Sample cooler along with valves and piping 6) Supply of Hangers and supports, BHEL Vision (electronic water level indicator) 7) Servicing of Boiler drum with internals and strengthening of boiler main structure and painting
1	Estimated Cost (Rs.Cr.)	a) Included in restoration cost for unit # 2 b) For unit # 1 Not charged			
2	Executing Agency	BHEL	BHEL		
3	Exp / Act Start date	Boiler-4.5.06 Turbine – 18.5.06 Generator Stator-15.5.06			
4	Comple-tion date	May 2008			
5	Actual Exp. (Rs.Cr.)	R&M work is being executed on turnkey basis and the cost against RLA is included in R&M cost.			
C	R&M / LE works				
1	Estimated cost for both units no.1&2 (Rs. Cr.)		471.80		ii) TG: The scope of works includes : 1) Replacement/repairs/polishing & modification of HP/IP/LP Turbine 2) Replacement of all flexible hoses 3) Balancing of all finished rotor & repairing of casing 4) Refurbishment of Shaft Turning gear(U-1 only),Turbine Governing System, Turbine gland system, Deaerator, Steam jet air ejector 5) Supply/replacement of Lubricating oil coolers, Seal oil coolers, Hydrogen coolers, Jacking oil pumps, condenser tubes, HP Heaters, LP Heaters, BFP,CEP, Condensate booster pump, Turbine drain system valves, Turbine governing valves, Insulation, Turbine lube oil system, TG Bearing & Coupling bolts 6) Installation Of Distributed Digital Control Monitoring & Information System(DDCMIS) 7) Complete overhauling of generator stator & complete testing /varnishing of generator rotor. 8) Regarding Electrical works, Refurbishment / replacement/supply of transformers, Generator bus duct, Protection panels, Bus changeover schemes, 220/132KV Switchyard.
2	Executing Agency : Boiler/ TG		BHEL/ BHEL		
3	No. of activities : Boiler / TG		48 Packages		
4	Date of start / completion (E/A)		LOA:15/04/2010 15.07.2010 December ,2012 (E)		iii) BOP : The scope of works includes : R & M of Bore well system ,Fire fighting system, Pre Treatment Plant, DM Plant , Chlorination Plant , Cooling Tower, Compressed Air System, Air Conditioning System, Ash Handling System, Fuel Oil System, Workshop, CW System, Raw Water System, Feed Water Booster Pumps, Chemistry Lab.
5	Actual Expenditure incurred (Rs. Cr.)		372.3 Cr. (Incd Restoration of Unit-2		

Status:

During the 12th CRM of Muzaffarpur TPS (MTPS) on 28.09.2012, BHEL has further rescheduled the commissioning of unit – 1 of MTPS by 24.12.2012. The following commissioning program was confirmed by BHEL:

- **Steam Blowing from 10.10.2012 to 20.10.2012**
- **Non-drainable hydro test from 25.10.2012 to 20.10.2012**
- **TG on barring gear by 15.12.2012**
- **Synchronization of the unit by 24.12.2012 with 5 mills.**

• STATUS OF LE/R&M WORKS OF BIHAR (KBUNL) THERMAL POWER STATION
(As on 30.09.2012)

A	Project details		Description	Broad status of various activities
1	Name of Power Station		Muzaffarpur TPS	Unit under shut down i) Boiler: The scope of works includes : 1) Replacement/refurbishment of Furnace water walls, Economizer, Super Heater, Re heater, Steam cooled wall tubes, SH&RH DESH station, Soot blowing system, Drain and vents, Fuel preparation and firing system. 2) Fuel Oil Firing System 3) Renovation/ Overhauling of APH &Draft system 4) Refurbishment of ESP 5) Replacement of Gates & dampers and Sample cooler along with valves and piping 6) Supply of Hangers and supports, BHEL Vision (electronic water level indicator) 7) Servicing of Boiler drum with internals and strengthening of boiler main structure and painting ii) TG: The scope of works includes : 1) Replacement/repairs/polishing & modification of HP/IP/LP Turbine 2) Replacement of all flexible hoses 3) Balancing of all finished rotor & repairing of casing 4) Refurbishment of Shaft Turning gear(U-1 only),Turbine Governing System, Turbine gland system, Deaerator, Steam jet air ejector. 5) Supply/replacement of Lubricating oil coolers, Seal oil coolers, Hydrogen coolers, Jacking oil pumps, condenser tubes, HP Heaters, LP Heaters, BFP,CEP, Condensate booster pump, Turbine drain system valves, Turbine governing valves, Insulation, Turbine lube oil system, TG Bearing & Coupling bolts 6) Installation Of Distributed Digital Control Monitoring & Information System(DDCMIS) 7) Complete overhauling of generator stator & complete testing/varnishing of generator rotor 8) Regarding Electrical works, Refurbishment / replacement/supply of transformers, Generator bus duct, Protection panels, Bus changeover schemes, 220/132KV Switchyard. *Partly restored during restoration of unit -2. iii) BOP : The scope of works includes : R & M of Bore well system ,Fire fighting system, Pre Treatment Plant, DM Plant , Chlorination Plant , Cooling Tower, Compressed Air System, Air Conditioning System, Ash Handling System, Fuel Oil System, Workshop, CW System, Raw Water System, Feed Water Booster Pumps, Chemistry Lab. *Partly restored during restoration of unit -2. Both the streams of CHP become operational on 20.04.2010. R&M of one wagon Tippler completed in Sept.'2010.
2	Unit No. & capacity		U-2,110MW	
	Make		BHEL/BHEL	
4	Date of Commissioning		17.03.1986	
B	RLA Studies / Consultancy			
	Description	Boiler	TG	
1	Estimated Cost (Rs.Cr.)	a) Included in restoration cost for unit # 2 b) For unit # 1 Not charged		
2	Executing Agency	BHEL	BHEL	
3	Exp / Act Start date	Boiler-4.5.06 Turbine – 18.5.06 Generator Stator-15.5.06		
4	Completion date	Nov-2006		
5	Actual Exp. (Rs.Cr.)	R&M work is being executed on turnkey basis and the cost against RLA is included in R&M cost.		
C	R&M / LE works			
1	Estimated cost for both units no.1&2 (Rs. Cr.)	471.80		
2	Executing Agency : Boiler/ TG	BHEL/ BHEL		
3	No. of activities : Boiler / TG	48 Packages		
4	Date of start / completion (E/A)	LOA:15/04/2010 Sept.' 2011 (BHEL to confirm revised schedule)		
5	Actual Expenditure incurred (Rs. Cr.)	372.3 Cr. (Incd Restoration of Unit-2		

STATUS OF LE WORKS OF WEST BENGAL (WBPDC) THERMAL POWER STATION

(As on 30.09.2012)

A	Project details	Description	Broad status of various activities
1	Name of Power Station	Bandel	Contract for BTG Package awarded to M/s. DHIC and signed on 29.02.2012.
2	Unit No. & capacity	U-5 , 210MW	Main Plant Package(B-T-G) Boiler: * Replacement of major Valves, Controllers & Hangers and Supports in Boiler & Turbine Area * Replacement of Water wall tubes, Attemperators * Replacement of Economiser coil * Replacement of Platen Superheater coils * Replacement of Final Superheater tubes * Complete replacement of Air pre heater tubes * Up-gradations of Mills and auxiliaries * Modification of ESP to achieve 90 mg/Nm ³ emission level at ESP Outlet Turbine: * Complete replacement of HP, IP & LP turbine * Complete tube replacement of Condenser, LP & HP Heaters * Replacement of BFP Cartridge with high efficient cartridge * Replacement of CEP, CW Pump Generator: *Replacement of Generator by new Generator
3	Make : Boiler/TG	AVB/BHEL	
4	Date of Commissioning	23/03/1983	
B	RLA Studies / Consultancy		
	Description	Boiler	TG
1	Estimated Cost (Rs.Cr.)		
2	Executing Agency	M/s Evonik	
3	Exp / Act Start date		
4	Completion date	January 2005)	
5	Actual Exp. (Rs.Cr.)		
C	R&M / LE works (Estimated cost: Rs.652 Cr.		
1	Total No. of package	4 (four) – BTG, CHP, Electrical &	

		AHP.	
2	Executing Agency : BTG package	M/s DHIC	
3	Zero date	29.02.2012	
4	Date of start (Original/ Expected /Actual)	Expected Date of start	
5	Date of completion (Original/ Expected /Actual)	June 2014 (E).	
6	Actual Expenditure incurred (Rs. Cr.)		