



Government of the People's Republic of Bangladesh

Ministry of Planning

Implementation Monitoring and Evaluation Division

Industry and Power Sector

# In-Depth Monitoring Report

on

“Siddhirganj 335 MW Combined Cycle Power Plant Project  
(2<sup>nd</sup> Revision)”

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## List of Abbreviations

AIT	Advanced Income Tax
BER	Bid Evaluation Report
C&F	Clearing & Forwarding
CCPP	Combined Cycle Power Plant
COD	Commercial Operation Dates
CT	Current Transformer
DOFP	Delegation of Financial Power
DPP	Development Project Proposal
ECNEC	Executive Committee of the National Economic Council
EGCB	Electricity Generation Company of Bangladesh
EPC	Engineering, Procurement and Construction
ERD	Economic Relations Division
ERP	Enterprise Resource Planning
FGD	Focus Group Discussion
G to G	Government to Government
GoB	Government of Bangladesh
GSA	Gas Supply Agreement
GT	Gas Turbine
GTCL	Gas Transmission Company Limited
HRSG	Heat Recovery Steam Generator
IA	Implementing Agency
IDA	International Development Association
IMED	Implementation Monitoring Evaluation Division
JV	Joint Venture
kVA	Kilo Volt Ampere
LC	Letter of Credit
LLA	Land Lease Agreement
LTSA	Long Term Service Agreement
MIS	Management Information System
MMI	Man Machine Interface
MVA	Mega Volt Ampere
NOA	Notification of Award
O & M	Operation and Maintenance
OE	Owner's Engineer
OLTC	On Load Tap Changer
PA	Project Aid
PGCB	Power Grid Company of Bangladesh
PPA	Public Procurement Act
PPA	Provisional Power Purchase Agreement
PSMP	Power System Master Plan
PT	Potential Transformer
RDPP	Revised Development Project Proposal
SLA	Service Level Agreement
ST	Steam Turbine
SWOT	Strength, Weakness, Opportunity and Threat
TGTDCL	Titans Gas Transmission and Distribution Company Limited
ToR	Terms of Reference
U/G	Underground
VAT	Value Added Tax
VT	Voltage Transformer
WB	World Bank



# Executive Summary

To fulfill the deficiency in the generation of electricity and to lower the existing frequency of load-shedding in the country Siddhirganj 2X150 MW Power Plant Project was identified as a peak load power plant. The DPP was approved in principle in the ECNEC meeting held in June 2007 in order to facilitate securing foreign financing for implementation of the project at a cost of Taka 207740.66 Lakh. Later, following the guidelines of World Bank and the decisions made in the interministerial meeting for changing the type of power plant, a tender was invited in October 2010 for the construction of 450 MW combined cycle power plant at Siddhirganj. The capacity of the power plant proposed by the responsive bidder was 335 MW in their bid proposal. So, the title of the project was finalized as “Siddhirganj 335 MW Combined Cycle Power Plant Project” in the RDPP commencing implementation with a total project cost of Taka 423947 Lakhs.

The main objectives of the project as described in the DPP are as follows:

- (a) To meet the electricity demand of the country especially Dhaka region by local generation & to enhance generation system capability;
- (b) To accelerate the economic development of the country by adequate reliable power generation in order to attain the planned target of power demand;
- (c) To increase the power generation through optimum utilization of country's natural gas resources;
- (d) To overcome the present generation shortage by increasing generation and to minimize load-shedding;
- (e) To enhance the stability and reliability of the national grid system and reduce the Transmission loss by localized generation;
- (f) To improve the economic development activities by reducing system loss;
- (g) To develop human resources through transfer of technology.

There are delays found in the project implementation for provisioning additional funds necessary and in approval process after tender evaluation and component wise cost allocation. After component wise financial analysis it may be found that the financial progress is 57.30% and the physical progress is 78.32% till date. It is found from study that PPR-2008 and guidelines of World Bank (whenever applicable) have been followed in the procurements of goods and services. As per regulation, tender notices were published in 2 local newspapers: 1 Bengali and 1 English and in the govt. website through CPTU. As per tender notice activities such as tender invitation, tender selling, tender opening, preparing comparative statements, tender evaluation, contractor selection and signing of contracts etc. were done following PPR-2008. Approvals and signing of contracts were completed based on the recommendations after evaluation by duly formed TOC and TEC.

The specifications of machineries/goods as per contract and actual specification found in the pre-shipment inspection reports have been examined and no differences were observed. There were no differences in actual supplies of main machineries/goods of the project.

Formal inspections are conducted (whenever applicable) for the procurement of machineries/goods before shipment from the respective countries and pre-shipment reports were submitted. The test results were found to be correct during inspection and the reports were satisfactory and then the machineries/good were supplied. Different types of machineries/goods after being made available at site by the EPC contractor were further inspected and studied by an approved committee and reports were submitted by that committee. Having found those machineries/goods consistent as per packing

list package, 20% payment against those items were made. Data/information obtained by these monitoring works have been described in chapter 4 to chapter 6.

To make a comparison with similar type of power plant, information and data from Haripur 412 MW Combined Cycle Power Plant have been collected and it is found that the implementation period as well as the construction cost per MW are comparatively higher for this project. Besides, implementation period and some other indices are compared with similar power plants namely, Ashuganj 450 MW (North), Ashuganj 450 MW (South), Pakistan Electric Power Company (747 MW), Dominion Virginia Power, USA (1360 MW), FGE Power, USA (1500 MW).

Comments have been collected from the Project Director and other people involved in the project work, Focussed Group Discussions have been conducted and comments from the general people around the project area on different issues have been collected. Besides, secondary data have been collected from different sources. Results from these studies have been described in chapter 8.

Strengths and Weaknesses have been identified based on the study and analysis of collected data and information during monitoring. Recommendations have been prepared based on the observations and studies on project implementation, analyzing financial and physical progress, project management, interviewing people involved in project work and also based on collected data/information which have been described in chapter 10. Some of the important recommendations are given below:

- There is no option of dual fuel other than using natural gas in the design of this combined cycle power plant. So, in case of limited supply of natural gas the generation of this power plant will also become limited or even can stop generation. Whenever possible this type of power plant must be designed and implemented with an arrangement of dual fuel provisions, although provisioning for dual fuel system will require additional space, additional equipment and additional funds.
- There is a school near the installed heavy equipment of the project. Although the measured parameters like sound level, vibration, temperature etc. are acceptable within the plant those are not valid for schools. Moreover, for any type of accident hazards the school will be in great danger. The school must be relocated to some other safe place. There provision of Taka 2765 lakhs for “Support to implementing agencies including construction of primary school and other facilities” in the RDPP (2nd Revision).
- The fuel exhaust and the black smoke and Carbon-di-Oxide and waste disposal from the plant are harmful to the environment. The temperature of the fuel exhaust gas in this plant is 99-100 degrees Centigrade which is much lower than the temperature of the exhaust of simple cycle plant (507 degrees Centigrade). Besides, using DLN 2.0+ Emission System is used in this project to keep the harmful effect at the lowest level. Therefore, whenever possible the plant should not be run on simple cycle.
- Installation works of gas turbine with auxiliaries, gas turbine generator, and main transformer have been completed by 18 February 2016. All related works of gas turbine generator have been finished by 26 March 2016 and gas turbine main transformer has been tested with back charge on 19 February 2016. Simple Cycle commercial operation of the project can be started now. But the work is pending and can not be started because the subcontractor General Electric of the EPC contractor is not present at the site till now. As a result -

- (a) Project implementation is delayed further;
- (b) Overhead cost and interest during construction etc. are increased;
- (c) Affects successive stages of project implementation;
- (d) Above all, we are getting deprived of electricity;
- (e) Moreover, performance of the machineries may be decreased for being unused for long times.

The issue must be settled with contractor as early as possible and commercial operation of simple cycle should be started. Initiative should be taken by all concerned in this regard.

- ☐ The project director have been changed for 5 times from the beginning of the project. Project implementation is hampered by changing project director. Hence, whenever possible project director should not be changed during project implementation.
- ☐ It is important to make arrangement for residential and nonresidential facilities for the personnel to be engaged in the operation and maintenance of the power plant. The operation and maintenance work of the power plant is a round the clock duty. Moreover, specifically trained human resources are required for operating power plants alternate of which can not be made available in most cases. Therefore, construction of residential facilities attached to the power plant is essential. There is provision for this in the RDPP. But there is no EGCB's land in the project area, so EGCB is trying to have land leased from BPDB to construct this type of residential facility. The issue should be resolved as early as possible and the construction of residential facilities should be started at the earliest.
- ☐ The performance of the contractor is not satisfactory because of their delays in execution, failing to achieve target of finishing works by taking proper initiative at proper time, suddenly leaving country by stopping on going works, etc. Contractor's lack of experience and lack of capability should be taken into account in further detail during making selection in future.
- ☐ The efficiency of simple cycle power plant is 35-40% and in some cases less than 30%; on the other hand the efficiency of combined cycle power plant is 55-60%. Considering the national interest of Bangladesh and securing the reserve of natural gas, construction of combined cycle power plant is more justified for generation of electricity.
- ☐ Energy Division/EGCB can take initiative to constitute "Core Technical Teams" with capable engineers and technicians from public and private sectors. During selection of engineers and technicians, due concern and unbiased attention need to be given so that experienced and expert people can be included in the team. Besides, retired and expert engineers may be included in these teams. Selected engineers and technicians are to be trained further in home and abroad to make them more expert.

# Chapter-1

## The Project under In-Depth Monitoring

### 1.1 Background of the Project

Electricity is the key to modern civilization and essential for socio-economic development of any country, particularly for a developing country like Bangladesh. At present, there is a huge shortage of generation capacity in the country resulting in large amount of load-shedding. As such development activities in industrial, commercial, agricultural and social sectors are being affected badly. The power system in Bangladesh therefore requires an optimum mix of base load plants and peak load plants to provide electricity at least cost. The Power System Master Plan Study (PMPS-1995) identified least cost base load and peak load plants and 2X150 MW Plant at Siddhirganj was included as a peak load plant. The site was found to be suitable for installing a power plant from the viewpoint of availability of power transmission system, etc. Therefore, the project titled Construction of Siddhirganj 2X150 MW Peaking Power Plant was formulated and EGCB prepared the Development Project Proposal (DPP) for approval of the Government. In order to facilitate securing foreign financing for implementation of the project, the government approved in principle the DPP of the project in the ECNEC meeting held in June 2007 at a cost of Taka 207740.66 Lakh. Requested by the government, World Bank (WB) agreed to finance and at continuous effort of Energy Division and ERD and achieving several milestone set by WB a loan agreement of 221.10 Million USD was signed between GoB and WB on 13-11-2008 for implementation of the project. The loan agreement was effective from 31-03-2009 and will expire on 30-06-2018.

After preparation of bid document, revision by World Bank and all other concerned authorities, and after necessary approval, an international tender was invited on 26-01-2009. Bids were collected on 30-04-2009 and evaluated by duly formed evaluation committee and sent to World Bank on 02-11-2009 for concurrence. The World Bank was constrained to give concurrence with Siemens machines as there was a bar on Siemens. In the mean time there were several meetings whose main objective was to expedite the implementation of the project. Finally, in an interministerial meeting with the World Bank on 02 September 2010 the following important decisions had been made:

- a) A fresh tender will be invited by EGCB for 450 MW gas fired combined cycle power plant in place of 300 MW gas fired peaking power plant following WB guidelines;
- b) WB will arrange additional funding for 450 MW CCPP;
- c) A time frame of 5(five) months up to the issue of NOA was agreed on the meeting for 450 MW CCPP.

As decided above, a tender was invited in October 2010 for construction of a combined cycle power plant at Siddhirganj. The cost in the RDPP (October 2011) is the cost as revised based on the cost of the responsive bidder and submitted to the planning commission in November 2011 after 14 months of the meeting of 02 September 2010. The name of the project was changed to Siddhirganj 335 MW Combined Cycle Power Plant Project” in the RDPP because the capacity of the combined cycle power plant was 335 MW in the bid proposal of the responsive bidder. In the changed scenario it took more than one year to prepare RDPP with allocating component-wise cost after collecting bid proposal and based on evaluation and to submit it (Recast, Oct-2011). On the other hand, subsequent

processing of the RDPP has been delayed further waiting for the concurrence from WB for additional funding.

Meanwhile, World Bank accorded concurrence dated 12-01-2012 on Draft Contract Document without confirming additional funding. Power Division issued a letter dated 12-02-2012 to Planning Commission to arrange for ECNEC approval on the RDPP (Recast Oct-2011) with provision for GoB funding for the part of EPC cost not covered in the existing IDA Credit #4508-BD in the interest of project implementation without delay. A PEC meeting was held dated 11-03-2012 on RDPP (1st revision). The following two decisions among others were taken in the PEC meeting:

- “4.2 Considering the importance of the project the additional finance may be provisioned from GoB fund which will be considered as a temporary arrangement. Efforts to obtain foreign aid to be continued through ERD;
- 4.3 RDPP to be revised if World Bank accord to provide additional funds.”

Afterwards “Siddhirganj 335 MW Combined Cycle Power Plant Project (1st Revised)” was approved in the ECNEC meeting on 10-04-2012 at a total cost of Taka 423947.56 Lakh and a contract was signed with JV of Isolux Ingenieria S.A. and Samsung C & T Corporation, Spain on 28-05-2012. In the PEC meeting dated 10-11-2014 the costs were reallocated between different heads.

A negotiation meeting was held on 04-10-2015 between govt. of Bangladesh and representatives of World Bank regarding “Siddhirganj Power Project-Additional Financing” for additional financing of USD 176.71 million based on the decision of ECNEC meeting dated 10-04-2012 and resolved that steps to be taken for the construction of the power plant with continued effort of the ministry through ERD that the additional cost of Taka 1564.55 crores required for the project to be funded by the World Bank or the govt. or private, GtoG or foreign investment. After a confirmation from the World Bank, a proposal for 2nd revision of the project was submitted and approved on the ECNEC meeting dated 25-02-2016 with an estimated cost of Taka 414415.35 lakhs (GoB Taka 60909.97 lakhs, Project Aid Taka 309998.81 lakhs and EGCB own fund Taka 43506.58 lakhs) which is Taka 9532.23 lakhs (2.25%) less than that of 1st RDPP and the implementation period is January 2009 to June 2017. Meanwhile, a loan agreement is signed between the govt. and the World Bank on 27-12-2015 for additional funding of USD 176.71 million. It is to be noted that the cost is decreased with a decrease in the rates of Euro. In the 1st revision, the cost in GoB head was increased from Taka 49434 lakhs to Taka 205890 lakhs due to changing the type of power plant from 2X150 MW to 335 MW Combined Cycle and also due to no decision of additional funding from World Bank. But after confirmation for additional financing from World Bank cost allocated in GoB head has been changed resulting in a decrease of 70.42% in the 2nd revision amounting to Taka 60909.97 lakhs.

## **1.2 Objectives of the Project**

The main objectives of the project as described in the DPP are as follows:

- (a) To meet the electricity demand of the country especially Dhaka region by local generation & to enhance generation system capability;
- (b) To accelerate the economic development of the country by adequate reliable power generation in order to attain the planned target of power demand;
- (c) To increase the power generation through optimum utilization of country's natural gas resources;



- (d) To overcome the present generation shortage by increasing generation and to minimize load-shedding;
- (e) To enhance the stability and reliability of the national grid system and reduce the Transmission loss by localized generation;
- (f) To improve the economic development activities by reducing system loss;
- (g) To develop human resources through transfer of technology.

### 1.3 Other relevant information of the project

- (a) Executing Agency: Electricity Generation Company of Bangladesh Limited (EGCBL)  
 Sponsoring Ministry/Division : Ministry of Power, Energy & Mineral Resources/Power Division  
 Location of the project : Siddhirganj, Narayanganj.

- (b) Project Implementation Period:

	Beginning	Ending	Date of Approval
Original	January, 2009	December, 2011	08-09-2009
1st Revised	January, 2009	June, 2015	10-04-2012
1st extension of the project without increase in cost	January, 2009	June, 2017	21-05-2015
2nd Revised	January, 2009	June, 2017	25-02-2016

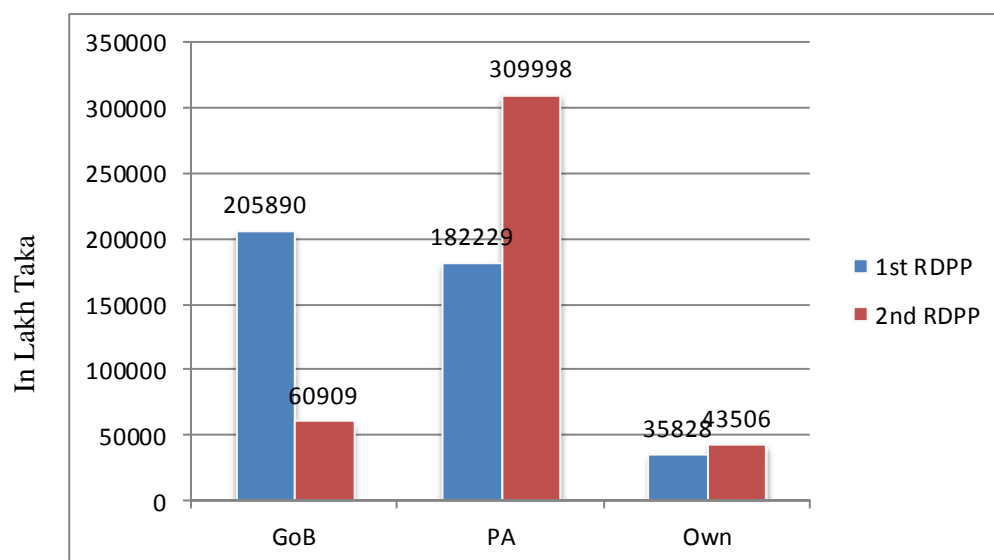
- (c) Revised Cost of the Project (In Lakh Taka):

	Total	GoB	Project Aid	EGCB	Remarks
Original	207740.66	49434.75	150213.07	8092.84	The original project was 2×150 MW which has been converted to 335 MW Combined Cycle Power Plant on the 1 <sup>st</sup> RDPP and hence the cost was increased
1 <sup>st</sup> Revised	423947.56	205890.29	182229.37	35827.90	
Reallocation after 1st Revision	423947.56	199812.37	188307.28	35827.90	To adjust Bank Charges
2nd Revised	414415.35	60909.97	309998.81	43506.58	After additional funding from World Bank, fund from GoB has been transferred to the Project Aid
	decrease 9532.20, 2.25%	decrease 144980.32, 70.42%	increase 127769.44, 70.11%	increase 7678.68, 21.43%	

- (d) Allocation in RADP:

There is an allocation of Taka 12500.00 Lakh (GoB 2000.00 Lakh and Project Aid 10500.00 Lakh) in the financial year 2015-16 for “Siddhirganj 335 MW Combined Cycle Power Plant Project (2nd Revision”

Graph 1.1 Cost allocation in 1<sup>st</sup> & 2<sup>nd</sup> RDPP



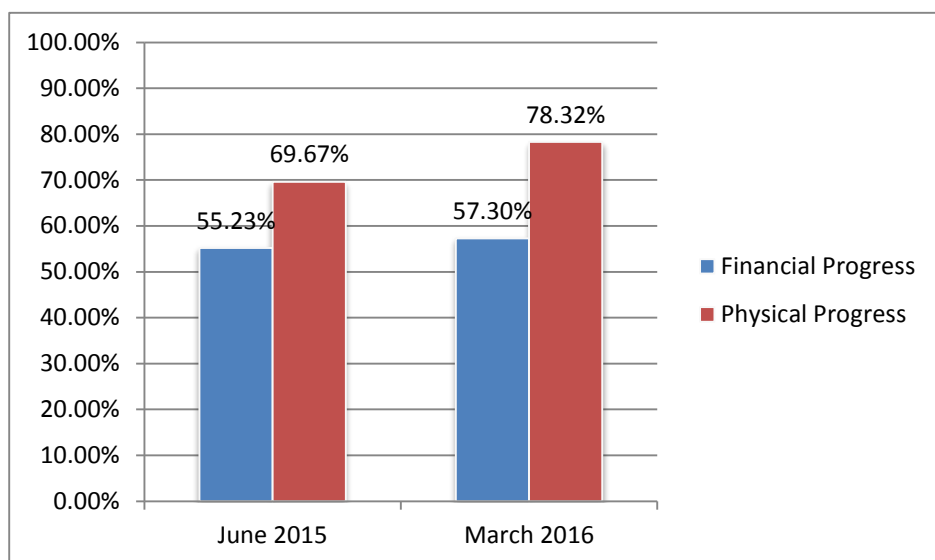
(e) Progress in implementation of the Project:

Financial progress from the start of the implementation of the project up to June 2015 is Taka 2285.21 crores (55.23%) and physical progress is 69.67%. Financial progress up to March 2016 is Taka 2374.60 crore which is 57.30% of the total cost of Taka 4144.15 of the project. Financial progress includes revenue Taka 9.23 crores, capital investment Taka 2356.75 crores and physical contingencies Taka 6.24 Lakh. For the same duration the physical progress is 78.32%.

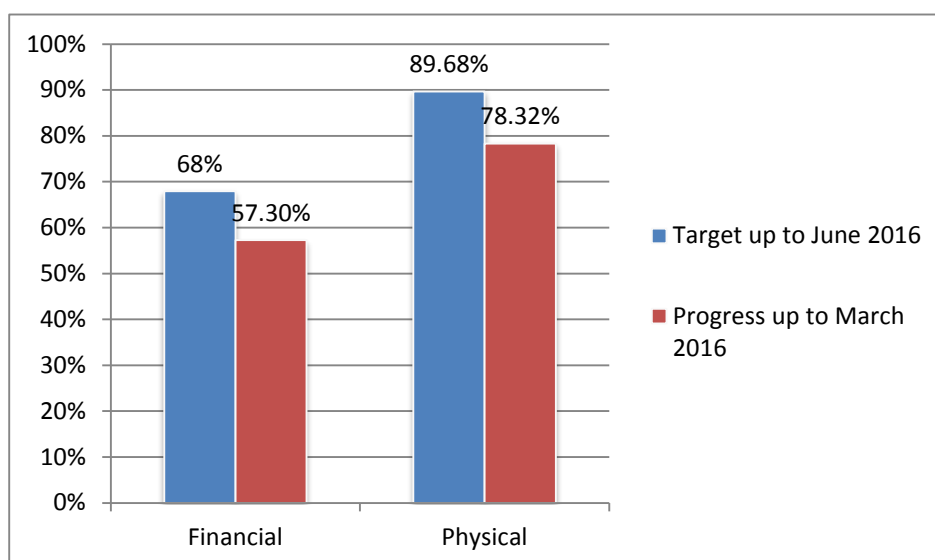
Table 1.1 Financial and Physical Progress up to March 2016

Project Cost (in lakh taka)	414415
Financial Progress (in lakh taka)	
Total	237460
Revenue	923.56
Capital	235675
Physical Contingency	6.24
Financial Progress as a percentage of the total project cost	57.30
Physical Progress (Percent)	78.32

Graph 1.2 Financial and Physical Progresses (June 2015 and March 2016)



Graph 1.3 Target upto June 2016 and Progress up to March 2016



## 1.4 Main activities of the project:

- (a) Installation of 217 MW Gas Turbine Unit
- (b) Installation of Heat Recovery Steam Generator (HRSG)
- (c) Installation of 118 MW Steam Turbine Generator Set
- (d) Installation of Cooling Tower
- (e) Installation of Water Treatment Plant
- (f) Installation of Gas Turbine Step-Up Transformer
- (g) Installation of Steam Turbine Step-Up Transformer
- (h) Installation of Gas Booster Compressor
- (i) Other civil works etc. for the main power plant construction

## **1.5 Main Features of the Revisions of the Project**

### **1.5.1 First Revision**

The main features of the first revision are as follows:

- (a) Mode of change of Power Plant: The plant was originally a simple cycle Peaking Power Plant which was subsequently restructured into base load Combined Cycle Power Plant.
- (b) Title change of the project: The factors as noted for mode of change of Power Plant also caused change in the title of the power plant reflecting the actual nature and actual quantum of net generation to be available from the facility as per the bid received and evaluated. “Siddhirgonj 335 MW Combined Cycle Power Plant” is thus the changed name of the project.
- (c) Increase in the scope and cost of the project: The restructuring involving main equipment e.g., Gas Turbine, Heat Recovery Steam Generator, Steam Turbine, Cooling Tower, Water Treatment Plant, etc. is obviously associated with increase in the project cost and it has been reflected in the RDPP (Recast, March-2012) based on the bid received and evaluated for the Combined Cycle Power Plant Project. Moreover, devaluation of BDT with respect to bid foreign currencies (USD & Euro) also caused price hike.
- (d) Extension of project duration up to June 2015: The restructuring also factored increase in the implementation time of the project involving Gas Turbine, Heat Recovery Steam Generator, Steam Turbine, Cooling Tower, Water Treatment Plant, etc. which has correctly been focused in the RDPP (Recst, March, 2012). Moreover, there have been delays in getting WB decision on Bid Evaluation Report (BER) of the Simple Cycle Plant bid followed by substantially long time taken by WB in providing :no objection” against the BER for the Combinrd Cycle Plant bid including decision on additional financing.

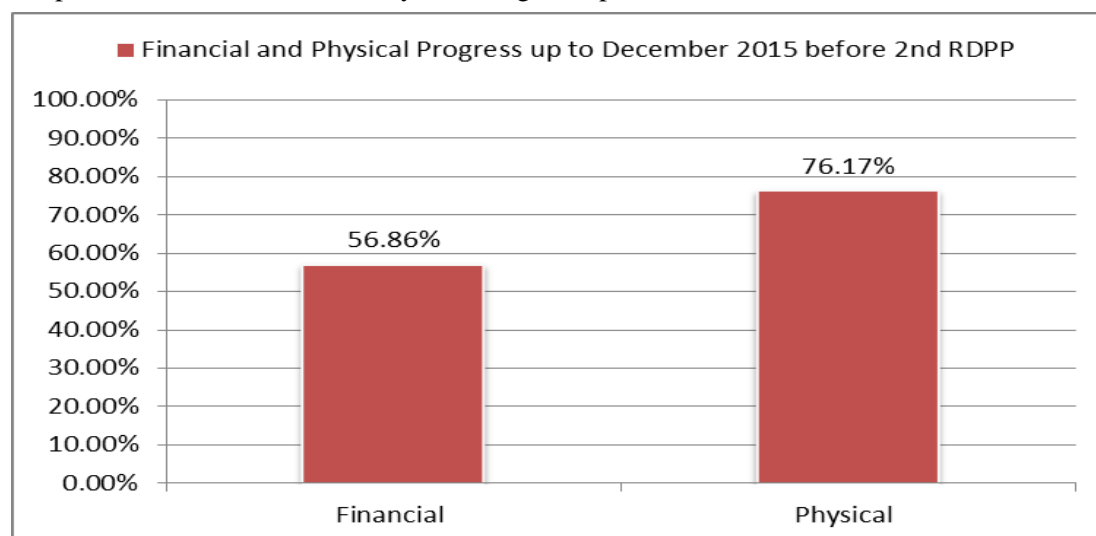
### **1.5.2 Second RDPP**

The main features of the second revision are as follows:

- (a) Change of Financing Mode: to ensure additional financing from IDA during restructuring of the project from simple cycle to combined cycle the World Bank had a commitment for making additional financing to the tune of 195 MUSD. ERD had been continuing its effort to ensure additional financing from IDA and the additional amount required was shown in the 1st RDPP as GoB as Cash Foreign Exchange as an interim measure with the condition to effect further revision of the RDPP as soon as full financing of the project by the IDA would be achieved. Finally IDA has agreed to finance 403.60 Million USD including Additional Financing of 176.71 Million USD. Therefore GoB Cash Foreign Exchange is converted to Project Aid (PA) in the Proposed 2nd RDPP.
- (b) Increased scope of the project: IDA committed to finance the new scope: Individual Consultant (IT), Construction of Primary School including other facilities, Support for Implementing Agency: Training, support for environmental monitoring and financial analysis and Price Contingency & Physical Contingency for EPC.
- (c) Overall project cost decreased: Overall project cost decreased due to fluctuation of exchange rate of USD & Euro.

Financial progress after the approval date 10-04-2012 of the 1st RDPP up to December 2015 was Taka 235652.66 Lakh which is 56.86% of the total cost of Taka 414415.35 Lakh of the project. Physical progress was 76.17% for the same duration. The 2nd RDPP was approved on 25-02-2016.

Graph 1.4 Financial and Physical Progress up to December 2015 before 2nd RDPP



## 1.6 Relevance of the Project with SDG & 7<sup>th</sup> Five-Year Plan and Vision 2021

In Vision 2021, it is expressed that energy security to be ensured for all for the development and welfare of the country. The objectives of “Siddhirganj 335 MW Combined Cycle Power Plant Project” are compared with two important aspects of Vision 2021 regarding energy security and is given below in table 1.2.

Table 1.2 Reflection of Vision 2021 in the Project

Items considered in Vision 2021	Siddhirganj 335 MW Combined Cycle Power Plant
Use of natural gas in power plant to be minimized so that remaining gas can be used for the production of fertilizers; use of coal in power plants to be increased so that natural gas can be freed for alternate use.	Most effective use of gas has been ensured by utilizing combined cycle concept. As a result, use of gas for per unit energy generation is relatively lower.
Use of natural gas, coal and oil as primary fuel.	Natural gas is used as primary fuel in this project.

In number 7 target of the SDG agenda, it has been stated that, within the year 2030 -

- 7.1 Low-cost, reliable and modern electricity to be provided for all;
- 7.2 Use of renewable source of energy to be increased substantially;
- 7.3 Rate of energy efficiency to be doubled.

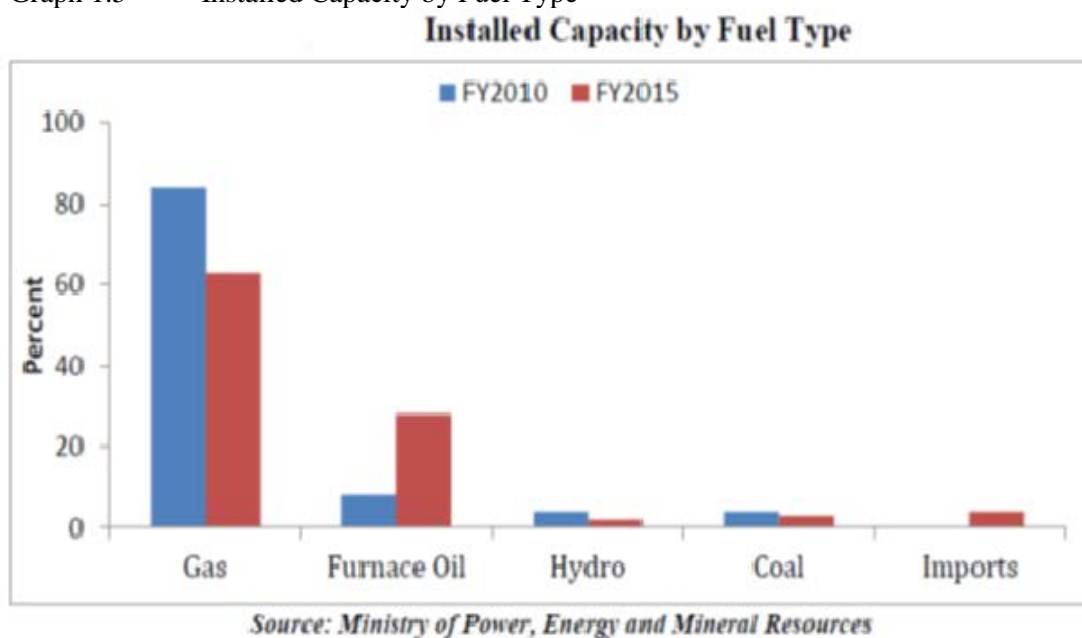
As stated in the Sustainable Development Goal or SDG that about 88% of electricity is generated by the use of natural gas and 50% of commercial use of gas is in the generation of electricity. Furthermore, balanced fuel mix is necessary for energy security. Use of different types of fuel in global and Bangladesh perspectives have been shown in the following table.

Table 1.3 Fuel Mix

Energy	Bangladesh		Global	
	Present	2021	Present	2030
Gas	87.5%	30%	18%	28%
Oil	6%	3%	10%	5%
Coal	3.7%	53%	37%	38%
Hydro	2.7%	1%	17%	4%
Nuclear	0%	10%	17%	19%
Renewable	0.5%	3%	1%	6%

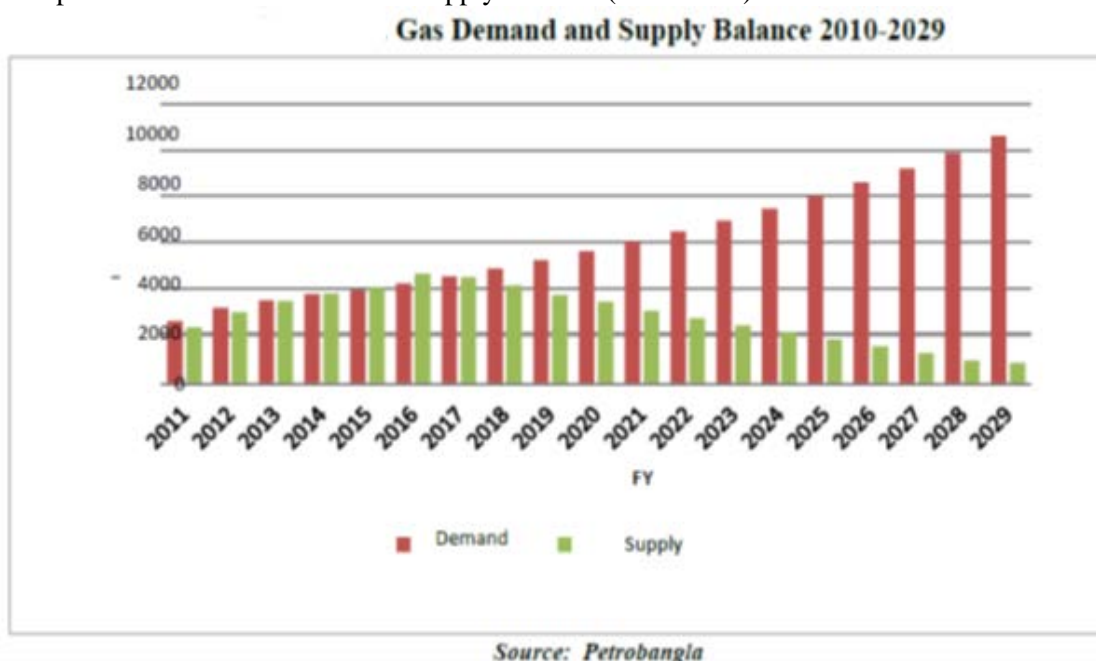
Use of coal to be increased in the energy mix. In middle and long term programs coal to be imported whenever necessary. Use of nuclear energy to be introduced. It is stated in SDG for Bangladesh that electricity to be made available more compared to that of 2015 and use of renewable energy to be increased. Electricity to be provided for all by 2020. As per Bangladesh plan 5% electricity to be generated using renewable sources by 2015 and 10% to be generated from renewable sources by 2020.

Graph 1.5 Installed Capacity by Fuel Type



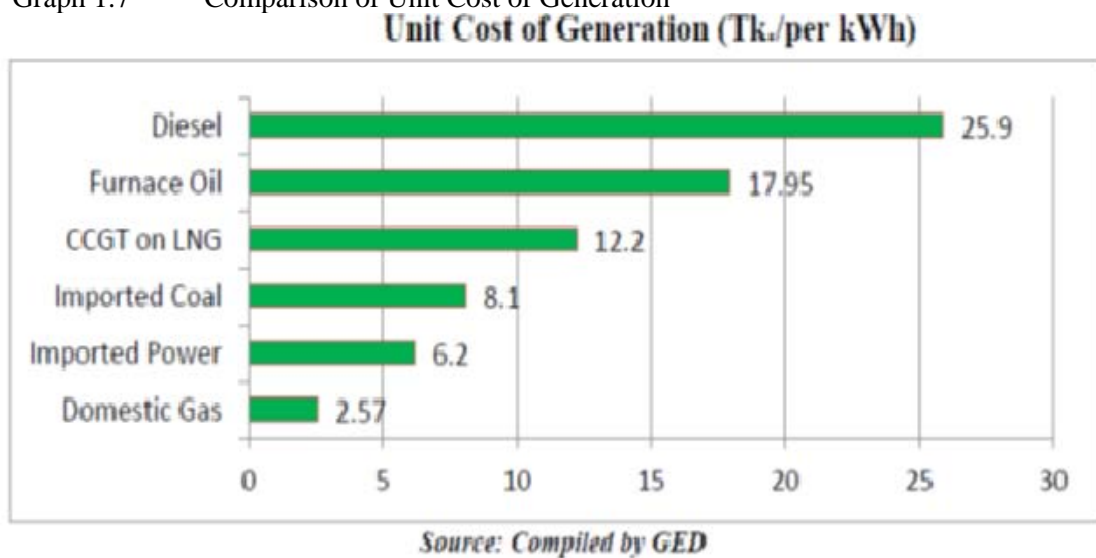
Energy sector of Bangladesh mostly depends on gas. Supply of gas against demand is decreasing day by day. Although power sector is given priority as compared to the production of fertilizers, still there are more demands than supplies.

Graph 1.6 Gas Demand and Supply Balance (2010-2029)



Per unit cost of generation of electricity is the minimum when gas is used as a fuel and much lower in comparison. Per unit costs of generation of electricity using different types of fuel has been compared in the following table.

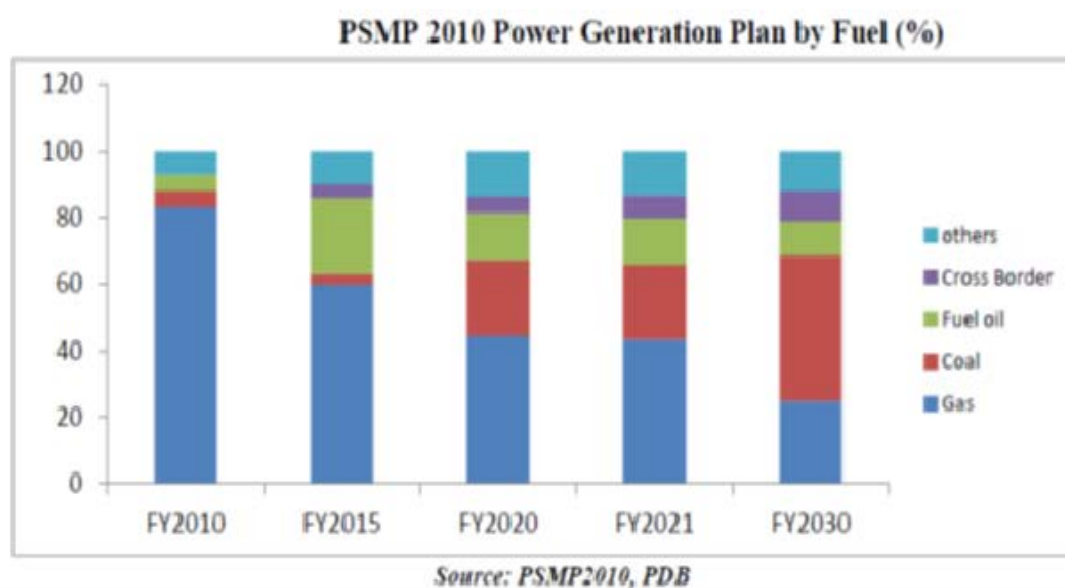
Graph 1.7 Comparison of Unit Cost of Generation



The thermal efficiency of Siddhirganj 335 MW Combined Cycle Power Plant is about 55% as per design and the per unit cost of generation of electricity is supposed to be about Taka 1.50.

PSMP 2010 Power Generation Plan by Fuel (%) has been given in the following graph.

Graph PSMP 2010 Power Generation Plan by Fuel(%)



Being combined cycle Siddhirganj 335 MW Combined Cycle Power Plant is a gas saving plant. 335 MW power will be added to PSMP 2010 Power Generation Plan as a result of the implementation of the project.

Production of Electricity as per 7th Five-Year Plan (based on fuel type) has been shown in the following table.

Table 1.3 Production of Electricity as per 7th Five-Year Plan (based on fuel type)

Proposed Seventh Plan Electricity Generation by Fuel Type (MW)						
Calendar Year	2015-2016 (MW)	2015-2016 (MW)	2015-2016 (MW)	2015-2016 (MW)	2015-2016 (MW)	Total (MW)
Gas	973	2401	657			4031
Gas LNG						
Duel Fuel	75	395	512			982
HFO	55	511				566
Coal			274	3036	1247	4557
Import	100		500			600
Renewable	68	30				98
Total	1271	3337	1943	3036	2997	12584

Siddhirganj 335 MW Combined Cycle Power Plant will add 335 MW to the 4031 MW target of Gas-based electricity generation in the 7th Five-Year Plan.



## Chapter - 2

# Background and Objectives of the In-Depth Monitoring

## 2.1 Background of In-Depth Monitoring

(a) Implementation Monitoring and Evaluation Division (IMED), as a central government entity conducts monitoring and evaluation works on government sector development projects under implementation so that different ministries and implementing agencies can implement government sector development projects properly reflecting the respective objectives and based on assigned duties and the scope of work. Identifying different problems of ongoing projects e.g., increase in cost and duration, changes in the scope of works and quality etc. originated during implementation by monitoring, IMED takes necessary and effective steps to resolve those problems.

(b) Due to insufficient human resources in IMED to conduct in-depth monitoring works of important development projects, different experts/consultants are being employed through outsourcing to assist in those activities under revenue budget every year starting from 2004. As a result, performance of IMED improved to a notable extent. Engr. Abubakar Md. Momshad Mashrequi has been appointed by outsourcing as an individual consultant for in-depth monitoring of the implementation works of one of the important projects under power sector titled “Siddhirganj 335 MW Combined Cycle Power Plant Project (2nd Revision)” in the current 2015-2016 financial year under revenue budget of IMED. A formal contract was signed between the Chief (Industry and Power Sector), IMED and Individual Consultant Engr. Abubakar Md. Momshad Mashrequi on 01-12-2015 in this regard. As per contract agreement the individual consultant will submit reports to IMED after finishing the in-depth monitoring work within a duration of 01-12-2015 to 31-03-2016 or in different duration with written consent from both the parties based on the Terms of Reference (ToR).

## 2.2 Objectives of the In-Depth Monitoring

The objective of the in-depth monitoring of “Siddhirganj 335 MW Combined Cycle Power Plant (2<sup>nd</sup> Revision)” is to monitor the project in all aspects in collaboration with project personnel and all possible stakeholders. The outcome of the proposed study would allow the sponsoring Ministry and Agency to implement the recommendations made by consultant in order to keep the project in right track. The specific objectives of the assignment are the following:

- 3.1 Review to check whether the activities are conducted in accordance with the approved RDPP;
- 3.2 Review and analyze the project activities to assess whether they can achieve the objectives of the project;
- 3.3 Make recommendations for the ministry and implementing agency in achieving the objectives of the project.

## 2.3 Scope of Work of In-Depth Monitoring

The scope of this in-depth monitoring work as per contract is as follows:

- 1 Make field visits to the project location to examine (a) the specification of the major components of the power plant (b) to examine the detailed design the power plant and its associated area/components, (c) to examine the quality of the construction works (d) to study the exhaust system of burnt flue gas and the impact of the plant on environment (e) economic viability of the project (f) additional Works as per DPP.
- 2 To review the target and actual progress of items of work implemented under the project and provide reasons for any deviation.
- 3 Examine the achievement of the project so far, identify problems & suggest means for future adherence;
- 4 Consult/discuss with the project management and collect data & information related to the project implementation;
- 5 To examine whether the procurement process (Invitation of tender, evaluation of tender, approval procedures, contract awards etc) of the packages (goods, works and services) under this project was done complying “Public Procurement Rules-2008” and any other guideline of development partner.
- 6 To apply SWOT analysis as to review the strengths, weaknesses, opportunities and threats toward implementation of project activities;
- 7 Conduct FGD (Focus Group Discussion) with BPDB, PGCB, EGCB, Titas gas, GTCL, Planning commission, Power division, IMED etc.
- 8 Prepare evaluation report based on the collected data from the project areas and get approval from Procuring entity (IMED), (b) Arrange a national level workshop for dissemination of the study findings and finalize the report incorporating workshop inputs, (c) All reports must be written in using Unicode Based Font, (d) Any other related works;
- 9 Render any other service assigned by the Procuring Entity (IMED) in consultation with the consultant to be done during assignment period.

## 2.4 Methodology for Conducting In-Depth Monitoring

The objective of the monitoring work under the contract was to complete the in-depth monitoring work of the current project titled “Siddhirganj 335 MW Combined Cycle Power Plant Project (2nd Revised)” which has been included in the annual development program of the financial year 2015-16. The consultant was required to follow the Terms of Reference (ToR) for the consultant duly written in the contract. Under those objectives both the primary and secondary data/information has been collected and related documents and papers from the project director’s office and from the concerned project area have been collected and studied. Project Director and other engineers involved in project implementation have been interviewed. Besides, the quality of the installed/to be installed machineries/goods of the plant has been assessed.

### **2.4.1 Field level Information and Data Collection from Project Area**

5 (five) data collectors were appointed for collecting field data/comments from the project area as per provisions in the budget for monitoring work. The data collector were trained for two days before sending them to the field for collection of data/comments and they were supplied with forms/questionnaire. Data and comments collected for existing facility within the project area as well as data for the progress of different works of the project under implementation and also data required for identifying problems of the project implementation were collected from the field level by the data collectors using forms/questionnaire and checklist of the attachments 4,5 and 7. There is no statistical population (individual or enterprise) as direct beneficiary of the project “Siddhirganj 335 MW Combined Cycle Power Plant Project (2nd Revision)”. To facilitate the monitoring work, a general questionnaire was prepared for the engineers and officers involved in the project works consisting of project implementation problems, causes of delays, impact of the project on environment, threats and opportunities and other issues of the project. Their comments were collected and analyzed. There was a need for collecting comments from the local people of different occupations for in-depth monitoring of the project which have been done successfully by the 5 data collectors appointed for this monitoring work. For this purpose a questionnaire was prepared discussing with the Chief (Industry and Energy), IMED and comments from 200 people from the project area around Siddhirganj were collected and analyzed.

### **2.4.2 Overall and Detail Study of Component-wise Target and Progress of Implementation Works**

Data and information regarding target and corresponding details of up to date overall and actual financial and physical progress have been collected from the project director’s office. Whether the progress and collected data and information are consistent have been investigated during visit to the project site. The problems during implementation of the various components of the project are identified and advice/recommendations to resolve those problems have been provided.

### **2.4.3 Procurement Monitoring**

Well prepared and approved forms have been used to monitor procurements of goods, works and services.

### **2.4.4 Following Procurement Policies**

Whether the contracts which are signed for the procurement of goods, works and services are made following the government regulation PPR-2008 have been examined with the records and documents maintained at the project director’s office. Data and information are collected, studied and comments have been made.

### **2.4.5 Testing Qualitative and Quantitative Aspects of procured/to be procured Goods, Works and Services.**

Tender documents/papers of procured/to be procured machineries and goods have been examined and their qualitative and quantitative aspects have been investigated by field inspection. The following reports and documents have been examined regarding qualitative and quantitative issues.

- ◆ Preshipment Report
- ◆ Receive Cum Damage Report (RCDR)
- ◆ Manufacturer and Country of Origin of Machineries and Equipment
- ◆ Test Result of those machineries and equipment tested before installation

### **2.4.6 Regarding problems in project implementation**

There were discussions and exchange of views regarding management and implementation of the project with the project director, engineers engaged in project implementation, local and foreign consultants and the contractors. Implementation problems are identified through discussion and exchange of views and advice/recommendations are made to resolve those problems.

## **2.5 Limitations of the In-depth Monitoring**

“Siddhirganj 335 MW Combined Cycle Power Plant (2nd revised)” is a large project. Four months time to complete the in-depth monitoring activities considering size of the project, scope of works, complexities in implementation procedures, sending data collectors and collecting data from the field, arranging several technical committee and steering committee meetings is really insufficient. For these reasons extension of time was necessary to complete the in-depth monitoring works.

## Chapter-3

# Observations of the Project Implementation and Financial and Physical Progress

### 3.1 Observations of Project Implementation

Mainly two types of works are being implemented in this project:

1. Machineries work for the generation of electricity; and
2. Construction of physical infrastructure.

#### 3.1.1 Machineries Work for the Generation of Electricity

To study the machineries work for the generation of electricity, data for the condition of component-wise implementation has been collected using a prescribed and approved form (form-1). Besides, to monitor component-wise physical progress of the turn-key part, EGCB's own part and GoB part, attempt was made to collect data in a prescribed form but the allocation of works in this form differ greatly with that of the certified progress report of the EPC contractor which they provide regularly . It is found from the study that collected information regarding the condition of component-wise implementation and the regular progress report provided by the turn-key EPC contractor provide an overall and clear idea of the condition of component-wise implementation of the project.

From Certified Progress Report submitted by turn-key (EPC) contractor for January 2016 it is found that about hundred percent works have been completed for all types of test e.g., geotechnical test, survey test, air quality test, noise study, water quality test, gas natural test, pile test etc. About hundred percent of piling and foundation works for civil, building and plant process equipment have been completed. There are some progress in different types of structure and finishing works for steam turbine building, water intake building, treatment plant but other works e.g., gas booster compressor (90%), electrical building (98%), rack structure (97%), water treatment plant building (85%), fire protection pump building (99.7%), installation of GT auxiliary equipment (95%), GT circuit breaker works (95%) etc. are almost completed.

For building works, finishing works of administrative building is not finished yet, about 62% works has been completed. 50% works of workshop and laboratory have been completed. Progress for civil and other miscellaneous works are 54%.

Progress for mechanical, electrical, erection and installation works is 74.85% in which works of cooling tower erection, steam turbine erection, water treatment plant and pre-treatment plant are not completed. Boiler erection work is completed by 84%.

Details of required works for the installation of main machineries up to April 2016 have been given in table 3.1

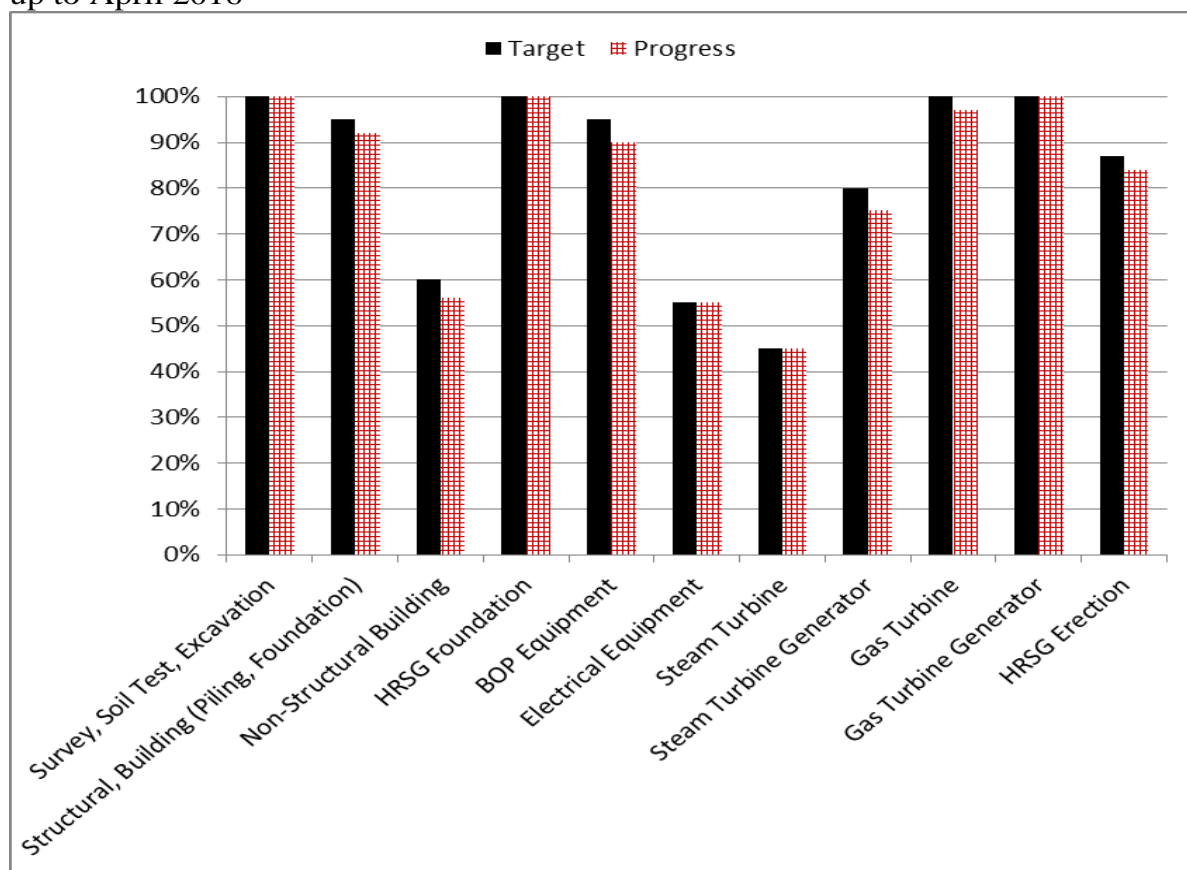
**Table 3.1 Target and Progress of Mechanical, Electrical, Erection and Installation works of the main components of the project up to April 2016**

Sl. No.	Name of Works	Installation Cost		Target	Progress up to April 2016
		In lakh taka	in percentage*		
1	Survey, Soil test, Air quality test, Land excavation and land filling	14485	4.70	100%	100%
2	Civil structural and building (piling, foundation) works for plant process equipment			95%	92%
3	Non-structural building (administrative building, workshop, guard house etc.)			60%	56%
4	HRSB (boiler) foundation	24631	7.90	100%	100%
5	HRSB (boiler) erection			87%	84%
6	Erection and installation of BOP equipment	65979	21.20	95%	90%
7	Erection of electrical equipment	14783	4.80	55%	55%
8	Steam turbine	30979	10.00	45%	45%
9	Steam turbine generator			80%	75%
10	Gas turbine	53696	17.30	100%	97%
11	Gas turbine generator			100%	100%

\*Percentage of the component-wise cost has been calculated based on the turn-key cost of Taka 310812.51 Lakh

Target and progress of works for the main components of the project up to April 2016 has been given in the following graph 3.1

Graph 3.1 Progress of Mechanical, Electrical, and Erection & Installation works up to April 2016



Factory tests as required for the project have completed by 91.67%. Trainings of 26 engineers who will be involved in operation and maintenance works have been completed. Foreign trainings have been completed 100% and on-job training 5% - on-job training will continue during commissioning stage. Besides, there is a provision of Taka 2672 lakhs in RDPP for training of 65 man-months foreign and 60 man-months local under EPC contract for the engineers to be engaged in operation and maintenance works.

Table 3.2 Factory Test/Inspection, Overseas Training and On-Site Training

Test/Inspection, Training	Progress
Factory test/Inspection	91.67%
Overseas training	100%
On-site training	5%

There is no progress in on-job training as the testing and commissioning works have not been started.

### 3.1.2 Construction Works of Physical Infrastructure

From the collected data and information for the status of component-wise implementation of the project, it is found that executing agency's own progress is 32% up to February 2016 in the case of transport vehicle and for GoB part it is 100%. EGCB proposed for construction of residential and non-residential buildings in the adjacent land owned by BPDB for providing residential and other civic facilities to the officers and staffs to be engaged in the operation and maintenance of the power plant after completion of the project. There is continuous correspondence with BPDB by EGCB in this regard. But the issue has not been settled yet. So, there is no progress in these works which are well included in the project.

For EGCB, progress for works of MIS is 6%. Physical progress for LC charge is 70%; for custom duty, tax and VAT 85%; for VAT and AIT 50%; for physical contingency 0.22%. Details of component wise target and progress up to March 2016 has been given in table 3.3. Data for component wise target and progress up to March 2016 has been given (attachment-1) in annexure-1.





Table 3.3 Component-wise target and progress up to March 2016 (GoB, EGCB &amp; PA)

Sl No	Description of works as per DPP	Quantity	Estimated Cost	Progress up to June 2015		Target for the Financial Year 2015-16		Progress up to March 2016	
				Financial	Phys (%)	Financial	Phys (%)	Financial	Phys (%)
1	Establishment Cost- (GoB)	LS	14.19	14.19	100			14.19	100
	Establishment Cost-(EGCB)	LS	1.,641.70	575.39	68.4	373.5		766.35	
	Transport (EGCB)	5 Nos,	252.27	73.77	32	117		73.77	32
2	Transport (GoB)	2 Nos.	69.26	69.26	100			69.26	100
3	Equipment	1 Lot	202,407.49	155,723.32	81.5	17,500	17.5	158,787	89.5
4	Design of Power Plant System	1 Lot	14,666.00	9,282.35	81.5	2,000.00	18	9,542.93	87.35
5	Civil Works (Turn-key)	1 Lot	14,485.09	2,335.08	60	15,000.00	39	2,716.27	67.5
6	Erection & Commissioning of whole power plant, service for guarranty engineer and first inspection and training (foreign)	1 Lot, 1 Lot & 67 person month	25,713.28	18,302.65	40	9,500	50	21,506.82	70
7	Training (Overseas/Local)	10 persons	2,672.22	0	0			0	0
8	O&M operator for 2×120 MW	1 Lot	6,912.50	2,468.46	40.	1,300.00	20.	2,951.86	53
9	O&M operator for 335 MW	1 Lot	4,661.00	0	0	240			0
10	Civil Works (Residential)	7097 sq-m	2,135.40	0	0			0	0
11	Civil Works (Non-Residential)	Lot	707.24	0.49	0.12			0.49	0
12	Duct Bank	1 Lot	324.23		0			0	0
13	MIS - Business Process Analysis	1 Lot	44.52	11.75	100			11.75	100
14	MIS - IT System Manager	1 Lot	74.20	27.3	50	40		7.74	51.15
15	MIS - Assistant IT System Manager	1 Lot	44.52	12.48	50	20		2.27	50.4
16	MIS - ERP Expert	1 Lot	42.87	20.78	80	15	10	13.69	90
17	MIS for EGCB	1 Lot	8,476.62	0	0	3,500.00		0	0
18	Infrastructure for MIS Phase-1	1 Lot	123.67	10.63	10	100		91.15	10.8
19	Infrastructure for MIS Phase-2	1 Lot	239.1	15.31	10	140		125.35	11.2
20	LTSA Service	1 Lot	20,050.20	0	0			0	0
21	Owner's Engineer	1 Lot	7110	871.11	30	2,645.00	36	1,114.73	60
22	Support to implementing Agencies including construction of primary school & other facilities	1 Lot	2,765.00	0	0			0	0
23	Legal cost		200					0	0
24	Fuel	LS	2,134.84		0			0	0
25	Interest during construction	LS	9		0			0	0
26	IDC	LS	21,361.28	1.14	0.01			1.14	0.01
27	LC Charge	LS	7,576.50	4,200.82	70		14	4,200.82	82
28	Custom Duty, Taxes and VAT	LS	24,812.97	23,000	85.			23,000.00	85
29	VAT & AIT	LS	23,424.15	11,489.76	50		30	11,489.76	68
30	Physical Contingencies	LS	3,464.04	6.24	0.22			6.24	0.22
31	Price Escalation	LS	15,800.00	0	0			0	0
	Total		414,415.35	228,521.50	69.67	52,489.50	20.01	8,938.69	78.32

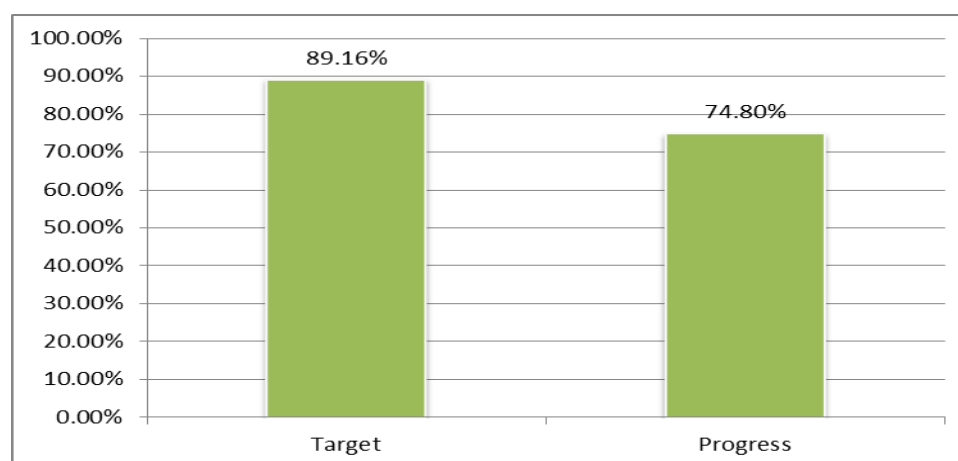
Progress up to March 2016 for Turn-key part has been shown on the table 3.4.

Table 3.4 Component-wise target and progress – Turn-key (up to March 2016)

(in Lakh Taka)

Sl No	Description of works as per DPP	Quantity	Estimated Cost	Progress up to June 2015		Target for the Financial Year 2015-16		Progress up to March 2016	
				Financial	Phys (%)	Financial	Phys (%)	Financial	Phys (%)
1	Equipment	1 Lot	201,407.49	155,723.32	81.5	17,500	17.5	158787.00	89.5
2	Design of Power Plant System	1 Lot	14,666.00	9,282.35	81.2	2,000.00	18.0	9542.93	87.3
3	Civil Works (Turn-key)	1 Lot	14,485.09	2,335.08	60.0	15,000.00	39.0	2716.27	67.5
4	Erection & Commissioning of whole power plant, service for guaranty engineer and first inspection and training (foreign)	1 Lot, 1 Lot & 67 person month	25,713.28	18,302.65	40.0	9,500	50.0	21506.82	70.0
	Total		257,271.86	185,643.40		44,000.00		192,553.02	

Graph 3.2 Progress of Turn-key part up to March 2016



For turn-key part, progress up to June 2015 is 72.15%; financial progress up to March 2016 is 74.8% against a target of 89.16%.

### 3.1.3 Training

The progress for training in the turn-key part has been shown in table 3.2.

There is a provision for Taka 720 lakhs in the RDPP (2<sup>nd</sup> revised) for “Support to implementing agencies including construction of primary school and other facilities” for capacity building by training for project related officers of EGCB, Power Division, Planning Commission (Sector-1 and Programming-1), ERD-1 and IMED-1. It is now under process.

Table 3.5 Training for Non-Turn-key Part

Type of training	Allocation in RDPP (in lakh taka)	Progress
Capacity building by training for project related officers of EGCB, Power Division, Planning Commission (Sector-1 and Programming-1), ERD-1 and IMED-1	720	Nil

## **Chapter-4**

### **Monitoring of Procurement of Goods, Works and Services for the Project Implementation**

#### **4.1 Monitoring of Procurement of Goods, Works and Services**

The plan which was made during preparation of DPP for the procurement of different types of goods, works and services has been included in the RDPP as Total Procurement Plan (APP) for Development Project/Program. 18 procurement packages have been planned in the latest RDPP (2nd Revision) in which there are provisions of 6 items for goods, 3 items for works and 9 items for services. During the observation there is no cases found to be split in two or more sub-packages.

The APP of the project have been attached with annexure-1. Against these procurement plans, hundred percent of the work have been achieved in some cases and works are going on in some other cases.

##### **4.1.1 Procurement of Goods**

As per RDPP there are 6 packages for the procurement of Goods:

- 1 Machinery & Equipment including civil works (Turn-key)
- 2 Supply and Installation of ERP & EAM
- 3 Core Network Infrastructure (2 Lots)
- 4 Procurement of Transport (3 packages)

Tender for turn-key works was invited on 13 October 2010 and after evaluation of the submitted bids and after approval of the bid proposal of the successful bidder by the EGCB Board, contract was signed on 28 May 2012. The work is ongoing till now. As per contract the work for simple cycle was fixed to be completed by 27 May 2014 and that for combined cycle was fixed to be completed by 27 March 2015. Afterwards the EPC contractor proposed completion dates for simple cycle on 26 May 2016 and for combined cycle on 17 March 2017. The target dates are amended 17 times from the beginning. After reviewing the progress up to March 2016 it seems to be very tough to complete the works of this procurement by June 2017.

Table 4.1 Shifting of Commercial Operation Dates (COD)

Effective Date of Contract (EDC)	27 September 2012
Commercial Operation Date (COD) for Simple Cycle after 20 months of EDC	27 May 2014
Commercial Operation Date (COD) for Combined Cycle after 30 months of EDC	27 March 2015
Last Agreed Commercial Operation Dates (COD):	
Simple Cycle	26 April 2016
Combined Cycle	17 February 2017
Commercial Operation Dates (COD) Proposed by the Contractor:	
Simple Cycle	26 May 2016
Combined Cycle	17 March 2017

Tenders were invited for the procurement of supply and installation of ERP and EAM on 28 April 2015 and submitted bid proposals were evaluated and concurrence of the World Bank on the bid proposal has been received. Now, awaiting contract signing.

Tender was invited for the procurement of Core Network Infrastructure or Infrastructure for MIS on 29 April 2014. Contract has been signed on 23 October 2014 after due evaluation of received bid proposals and approval of the successful bid proposal by the EGCB Board. In the mean time, the procurement work has been completed.

Procurement of transport vehicle by GoB fund has been completed by May 2014. 2 tender for the procurement of transport vehicle by EGCB's own fund is under way.

It has been observed from the collected documents that the procurement of packages for the goods have been completed following PPR-2008 and PPA-2006.

## 4.1.2 Procurement of Works

Procurement of works as per 2<sup>nd</sup> RDPP are:

- 1 Civil construction works (Non-residential)
- 2 Civil construction works (Residential)
- 3 Construction of School Building and other related facilities

Necessary lands to be leased from BPDB to execute the above works which is still under process. Invitation of tenders for the procurement of these packages are not possible for this reason. EGCB has got no lands for execution of civil works, so EGCB is trying hard to have required land for the residential and non-residential civil works leased from BPDB.

### 4.1.3 Procurement of Services

Procurement of Services as per 2<sup>nd</sup> RDPP are:

- 1 O & M Operator Service for Siddhirganj 2×120 MW PPP
- 2 O & M Operator Service for Siddhirganj 335 MW CCPP
- 3 Business Process Analyst for MIS
- 4 IT System Manager
- 5 Assistant IT System Manager
- 6 ERP Expert
- 7 Financial Consultant
- 8 LTSA Service for GT
- 9 Owner's Engineer

Tender was invited for O & M Operator Service for Siddhirganj 2×120 MW PPP on 25 November 2009 and a contract was signed on 13 December 2011. It is ongoing and will be finished on 30 June 2017 as per contract.

Tenders were invited two times for the procurement of O & M Operator Service for Siddhirganj 335 MW CCPP but there was no responsive bidder in both cases. Re-tendering is under process.

For procurement of Business Process Analyst for MIS, IT System Manager, Assistant IT System Manager, and ERP Expert, contracts has been signed on 24 November 2013, 16 July 2014, 16 July 2014, 13 November 2013 respectively. These contracts will be finished on 2017.

Again, tender was invited on 13 October 2010 for procurement of LTSA Service for GT and a contract was signed on 5 June 2013. The contract will be finished on 30 June 2017.



HRSG, Main Stack & Bypass Stack area

Tender was invited on 16 May 2012 for the procurement of Owner's Engineer Services and the contract for the same was signed on 18 December 2013; the work will be finished by 10 June 2017. It is to be noted that the contract for turn-key work has been signed on 28 May 2012 the effective date of which is 27 September 2012 while the Owner's Engineer was appointed on 18 December 2013 about 15 month's later. Tender for the

procurement of services of Financial Consultant for preparing 10 years business plan for EGCB is under process. The procurement of the above-mentioned service packages were found to be completed or being completed duly following PPR-2008 and PPA-2006. The World Bank guidelines

are found to be followed whenever applicable. Evaluations are found to be done by duly formed TOC and TEC and contracts are signed after having approvals from appropriate authority based on recommendation of TEC.

## 4.2 Monitoring Tendering Process of the Project

Data and information have been collected in prescribed and approved form for 14 procurement packages detailing whether the procurements have done following PPA-2006 as well as PPR-2008 and also whether following guidelines of the development partner whenever applicable. From the collected data and information it has been found that the tender documents have been prepared based on PPA and also based on the guidelines of the development partner whenever applicable. Except DPM the tenders are invited through tender notices published in at least two daily newspapers one of which was english. All members of the committee were present during tender opening. There were 6 members in the evaluation committee 2 of which were external. They completed their evaluation following the PPR. There was no complaints found for the tenders. Tenders were found to be approved by EGCB Board or the Managing Director as per DOFP. Tender notices with value more than one crore were sent to CPTU. In most of the cases the works of the procurement are ongoing now.

Tenders which are under process are 3 for goods, 2 for service packages and tenders for 3 packages for works can not be started due to the land issues which are yet to be settled. Total Procurement Plan (APP) for Development Project/Program of the RPDD has been attached in the annexure-1.

Forms with collected information of compliance of procurement processes for 14 procurement packages (Form-6) have been included in annexure-1. Details of collected data/information of 2(two) packages analyzing the procurement processes have been given below:

- (a) Name of the Procurement Package: Supply, Installation, Integration, Testing and Commissioning of necessary equipment for the establishment of Core Network infrastructure (Package-2) for corporate office, Siddhirgonj 2×120 MW PPP, Siddhirgonj 335 MW CCPP, Haripur 412MW CCPP and Data Center (DC) of EGCB Ltd.
- Bidding document has been prepared following Standard Bidding Document of World Bank
  - Tender notice has been published in The Daily Ittefaq and in The Daily Star on 29-04-2014, also sent to CPTU for tender value being more than Taka 1 crore.
  - Tenders proposals have been accepted and opened by the tender opening committee on 27-05-2014.
  - Tender evaluation committee has been formed on 21-05-2014, there were 2 external members in the tender evaluation committee.
  - There was no complaint found to be received regarding the tender.
  - Managing Director, EGCB approved the responsive tender after after being evaluated duly by the evaluation committee.
  - NOA has been awarded on 25-08-2014 and 58 days after that contract has been signed on 23-10-2014.

- Contract value was Taka 2,28,95,000 (Taka two crore twenty eight lakhs ninety five thousands only)
  - Procurement has been completed as per contract and payments have been made as per contract.
- (b) Name of the Procurement Package: Engaging a Service Provider for Operation and Maintenance Service of Siddhirganj 2x120 MW Peaking Power Plant, Siddhirganj, Narayangani, Bangladesh
- Bidding document has been prepared following the PPA and the procurement guidelines of World Bank
  - Tender Notice has been published in the Daily Ittefaq, The Daily Star, The Daily Bhorer Kagoj and The New Age on 28-10-2007 and 29-10-2007.
  - Tender proposals were accepted and opened on 21-01-2008 by the tender opening committee.
  - A 6 member tender evaluation committee was formed with 2 external members.
  - There was no complaint found to be received regarding the tender
  - Bid proposal was approved by the EGCB Board following the recommendations received after duly evaluated following the PPR as per DOFP.
  - NOA has been awarded on 31-10-2011 and contract has been signed on 18-12-2011
  - Contract value was Taka 69966 lakhs.
  - Work is going on and payments are being made as per contract.

Contract price of completed packages have been shown as estimated cost in the RDPP. Therefore, the estimated cost and contract price in the details of collected information through form-6 are similar.

### 4.3 Verification of Specifications of Main Components of the Project.

Main Components of the Project are, Gas Turbine, Steam Turbine, Condenser, HRSG, Gas Turbine Generator, Steam Turbine Generator, Gas Turbine Generator Main Transformer and Steam Turbine Generator Main Transformer etc. As per contract, the shipment of these components were arranged having pre-shipment inspection report issued after completion of appropriate factory tests and inspection. The specifications of machineries and equipment are tested during these tests and inspection. The pre-shipment inspection reports of the project have been studied. The details of the data/information after monitoring in this regard are included in the form (Form-4) and attached with annexure-1.

Main Components of the Project are:

- ☐ Gas Turbine
- ☐ Steam Turbine
- ☐ Gas Turbine Generator
- ☐ Steam Turbine Generator
- ☐ Gas Turbine Generator Main Transformer
- ☐ Steam Turbine Generator Main Transformer
- ☐ HRSG

Preshipment reports and Receive-cum-Damage (RCDR) reports of the main Machineries/Goods have been studied for the verification of their specifications.

#### 4.4 Data after Monitoring Machineries and Equipment

No differences were found in the quantities of actual supply of the main machineries/goods of the project. After monitoring a details are given in the following table which is included in annxure-1.

Table 4.2 Monitoring of Quantities of Machineries/Goods

Sl. No.	Description of Main Machineries/Goods	Supply as per Contract	Actual Supply	Installed Quantity of Machineries/Goods	Supplied Quantity of Machineries/Goods
1	Gas Turbine	1	1	1	1
2	Steam Turbine	1	1	1	1
3	Condenser	1	1	1	1
4	HRSG	1	1	1	1
5	Gas Turbine Generator	1	1	1	1
6	Steam Turbine Generator	1	1	1	1
7	GTG Main Transformer	1	1	1	1
8	STG Main Transformer	1	1	1	1

No difference has been observed in the supply of main equipment



## Chapter-5

### Examining the Qualitative and Quantitative aspects of Procured/to be Procured Goods, Works and Services

Tender documents/papers of procured and to be procured machineries and goods have been examined and their qualitative and quantitative aspects have been investigated by field inspection. The following reports and documents have been examined regarding qualitative and quantitative issues.

- ◆ Pre-shipment Reports
- ◆ Receive Cum Damage Reports (RCDR)
- ◆ Manufacturer and Country of Origin of the Machineries/Goods

#### 5.1 Pre-Shipment Reports

In most cases, the pre-shipment reports are required to be submitted after inspection in the case of the procurement of machineries/goods before shipment. No defects and differences are found as per specifications during these inspections and on satisfactory inspection reports goods of these packages are supplied.

As per contract, the tests described in the following table are performed in the factories of the manufacturers before the presence of the EGCB representatives.

Table 5.1

Equipment	Manufacturer	Test	City	State/Province	Country	Date
Gas Turbine	GE	FSNL+Post visual inspection	Greenville	SC	USA	9-Apr-13
Steam Turbine	GE	LP Rotor Balance	Schenectady	NY	USA	21-Mar-14
GT Generator	GE	Rotor Complete Hi-pot	Schenectady	NY	USA	17-Jun-13
ST Generator	GE	Stator Winding Hi-pot	Weiz	Styria	Austria	17-Jan-14
GT Transformer	ABB	Routine Tests	Lodz	Lodz	Poland	4-Nov-13
ST Transformer	ABB	Routine Tests	Lodz	Lodz	Poland	5-Dec-13
Gas Compressor	Cameron	Mechanical Test (1 unit)	Buffalo	NY	USA	25-Sep-13
HRSG	CMI	Drums and Modules inspection	Daechang	Ulsan	South Korea	9-Jan-14
Circuit Breaker	ABB	Routine Test (2 units)	Zurich	Zurich	Switzerland	12-Sep-13
230 kV Cable	General Cable	FAT Tests	Manlleu	Barcelona	Spain	19-Jan-14
ICMS	GE	SW FAT Tests (Simple Cycle)	Salem	Virginia	USA	16-Sep-13
Calibration Test Bench	ISOTECH	Final inspection	Tonbridge	Kent	UK	14-Oct-15

After the duly performed test being successful and having the test reports submitted only then the machineries/goods are said to be qualified for shipping. These reports at the project director's office have been examined. Factory test reports for circuit breakers for gas turbine and steam turbine, step-up transformer for steam turbine, distributed control systems, gas turbine generator and gas booster have been included in annexure-2 as sample.

## 5.2 Receive Cum Damage Repoets (RCDR)

The RCDR committee submits reports after examining shipping document packing lists (package) of different types of machineries supplied by EPC contractor. Decisions have been made to accept these machineries and goods after examinining these with the specificatons and being consistent. 5 different copies of receive cum damage reports are attached in annexure-2 as sample.

The qualities of the purchase/procurement of machineries and goods required for the project implementation have been ensured by the arrangement of pre-shipment report and receive cum damage report (RCDR) as decribed in paragraph 5.1 and 5.2.

## 5.3 Manufacturer and country of origin of the main components

Manufacturer and country of origin of the main components of the power plant are described in the following table.

Table 5.2 Manufacturer and country of origin of the main equipment

Sl. No.	Name of the component	Manufacturer
1	Gas Turbine	General Electric, USA (Frame 9FA)
2	Steam Turbine	General Electric, USA
3	GT Generator	General Electric, USA
4	ST Generator	General Electric, USA
5	GT Step-Up Transformer	ABB, Poland
6	ST Step-Up Transformer	ABB, Poland
7	Gas Compressor	Cameron, USA
8	HRSG & its stack	CMI, Belgium
9	Generator Circuit Breaker	ABB, Switzerland
10	ICMS	General Electric, USA

In the mean time, reports have been submitted by the EGCB representatives visiting the factories in the respective countries after performing required tests and inspection on the components as described in table 5.2.

## 5.4 Efficiency

Table 5.3 Data for measuring efficiency of the turbine generators

Prime Capacity	Gas consumption per hour at 50% load	Gas consumption per hour at 50% load	Maximum output power	Remarks
335 MW	1.374 MM SCF	2.291 MM SCF	349.4 MW	

MM SCF      Million Million Standard Cubic Feet

### ☐ Simple Cycle

Net Output Power = 217 MW

Net Heat Rate at 100% Output (217 MW) = 10395 kJ/kWh (LHV); Efficiency = 34.6%

Net Heat Rate at 50% Output (108.5 MW) = 11476 kJ/kWh (LHV); Efficiency = 31.4%

### ☐ Combined Cycle

Net Output Power = 335 MW

Net Heat Rate at 100% Output (335 MW) = 6726.5 kJ/kWh (LHV); Efficiency = 53.5%

Net Heat Rate at 50% Output (167.5 MW) = 7756.7 kJ/kWh (LHV); Efficiency = 46.4%

Efficiencies are comparable to the conventional combined cycle power plants



## Chapter-6

### Project Management and Observations on Actual Implementation

#### 6.1 Project Management

As per the provision of the RDPP a total of 24 personnels namely, 1 Project Director, 2 Superintendent Engineers, 3 Executive Engineers, 1 Deputy Manager, 2 Sub-Divisional Engineers, 2 Assistant Engineer, 2 Sub-Assistant Engineers, 1 Store Keeper, 1 Accounts Assistant, 4 Office Assistants, 3 Drivers, 2 Office Attendants are engaged for implementation and management of the project. 1 Office Assistant, 5 Drivers and 3 Attendants are also appointed on daily basis. The present Project Director is maintaining the works of project implementation and management successfully with the posted officers and staffs.

The first project director was posted in January 2009. He was then transferred after 1 year and 2 months and another one was posted. Successively after 1 year 2 months, 8 months, and lastly after 2 years and 5 months present project director has been posted i.e., he is the 5th project director in the last seven and a half years. All officers and staffs have been appointed by EGCB and there is no vacant posts. Project works are being implemented by the present human resources.

Table 6.1 Name of the Project Directors with tenure till date

Sl. No.	Name	Duration
1	Zahid Uddin Ahmed	01 January 2009 to 07 March 2010
2	Kazi Abdul Wadud	08 March 2010 to 12 May 2011
3	Khondoker Maksudul Hasan	15 May 2011 to 03 January 2012
4	Md. Siddiqur Rahman	04 January 2012 to 30 June 2014
5	Md. Nazmul Alam	From 01 July 2014 till date

The turn-key contract has been signed on 28-05-2012 and in May 2012, 3 officers and 6 staffs have been posted which is very small in numbers compared to the requirements. A list of posting of the officers and staffs in different times is given below.

Table 6.2 List of placements of the officers and staffs

	Number of Officers including Project Director	Number of Staff
May 2012	3	6
October 2012	9	6
October 2013	11	7
December 2014	13	17

## 6.2 Actual Implementation Scenario of the Project

Tendering process for the procurement of some the items of Goods, Works and Services have been completed and some others have not been completed. Details of those packages of Goods, Works and Services have been given in the following tables.

Table 6.3 Procurement of Goods (Contract signed and completed/ongoing packages)

Package	Name of Work	Present Condition/Progress
GD 1	Machinery & Equipment with associated civil works (Turnkey)	Contract signed on 28-05-2015, running
GD 3	Infrastructure for MIS	Contract signed on 23-10-2014, completed
GD 4	Procurement of 1Jeep & 1 Pickup	Completed
GD 5	Procurement of Vehicle ( 2 Car, 1 Pickup)	Completed

Table 6.4 Procurement of Services (Contract signed and ongoing packages)

Package	Name of Work	Present Condition/Progress
SD 1	O&M Operator Service for Siddhirganj 2X120 MW Peaking Power Plant	Contract signed on 18-12-2011, running
SD 3	Bussiness Process Analyst (BPA) for MIS	Contract signed on 24-11-2013, running, to be completed by 30-06-2017
SD 4	IT System Manager	Contract signed on 16-07-2014, running
SD 5	Assistant IT System Manager	Contract signed on 16-07-2014, running
SD 6	ERP Expert	Contract signed on 13-11-2013, running, to be completed by 30-06-2017
SD 8	LTSA Service for GT	Contract signed on 05-06-2013, work will start soon, to be completed by 30-06-2017
SD 9	Owners Engineer	Contract signed on 18-12-2013, running, to be completed by 10-06-2017

The following packages of Goods, Works and Services are under process of procurement.

Table 6.5 Procurement of Goods (Under process)

Package	Name of Work	Present Condition/Progress
GD 2	Supply & Installation of ERP & EAM Under MIS	Under process
GD 5	Procurement of Vehicle( 1 Pickup, 1 Microbus)	Under process
GD 6	Procurment of Motorcycle	Under process

Table 6.6 Procurement of Services (Under process)

Package	Name of Work	Present Condition/Progress
SD 2	O&M Operator Service for Siddhirganj 335MW CC PP	Re-Tender Under process
SD 7	Financial Consultant for Preparing 10 years Business Plan for EGCB under Support to Implimenting Agency	Under process

Table 6.7 Procurement of Works (Under process)

Package	Name of Work	Present Condition/Progress
WD 1	Civil works ( Non-residential)	Under process
WD 2	Civil works ( Residential)	Under process
WD 3	Construction of School Building & Other Facilities	Under process

Tendering processes which have been completed duly followed the PPA-2006 and PPR-2008 and whenever applicable also followed the guidelines of the World Bank.

The status of the packages with tendering processes not yet completed, are as follows:

Table 6.8 Procurement of Goods (Under tendering process)

Package	Name of Work	Present Condition/Progress
GD 2	Supply & Installation of ERP & EAM Under MIS	Tendering completed, receieved concurrence from WB, contract signing process on going
GD 5	Procurement of Vehicle ( 1 Pickup, 1 Microbus)	Tendering process started
GD 6	Procurement of Motorcycle	Tender will be invited next financial year

Table 6.9 Procurement of Services (Under tendering process)

Package	Name of Work	Present Condition/Progress
SD 2	O&M Operator Service for Siddhirganj 335MW CC PP	Tender invited 2 times, no responsive bidder. Retendering under process.
SD 7	Financial Consultant for Preparing 10 years Business Plan for EGCB under Support to Implimenting Agency	Tender invited in newspapers, no responsive bidder

Table 6.5 Procurement of Works (Under tendering process)

Package	Name of Work	Present Condition/Progress
WD 1	Civil works ( Non-residential)	Tendering and all other procurement process will be started after getting land leased from BPDB.
WD 2	Civil works ( Residential)	
WD 3	Construction of School Building & Other Facilities	



All the procurement under those packages for goods having contracts already signed and having work order issued have been completed except procurement of Machinery & Equipment with associated civil works (Turnkey) (GD1). Those procurement of services having contracts already signed are all ongoing. Tender for the procurement of works are under process procurement of which will be completed subject to the availability of land from BPDB.

## 6.3 Problems in Project Implementation

### (a) Delays in different stages of project implementation

1. At the beginning, for construction of a 2X150 MW peaking power plant, bid evaluation report was sent to World Bank on 02-11-2009 for concurrence but a decision was taken after 11 months in the interministerial meeting dated 02-09-2010 to change the type of the power plant. Changing the type of the power plant created complexities in additional funding which has been described in chapter 1. The issue of additional funding has been resolved by signing a loan agreement between the government and the World Bank on 27-12-2015 (after about 5 years) for additional funding of USD 176.71 million. In most cases, making coordinated decisions among the stakeholders to implement government projects take a lot of time delaying project and the delays maybe so longer that the delays are continued to be added in the next stages of works and processes. In many cases complexities arise with the contractor regarding time and financial matters due to the delays in making decisions.

2. It has been observed that longer times have been elapsed in making decisions and finishing decision process at every stages from the very beginning of the project. It may be understood from the following two tables.



Table 6.11 Delay in implementation of the project: Decision making and procedural activities

Date	Decision making and procedural activities	Remarks
June 2007	As per PMPS-1995 Siddhirganj 2×150 MW Peak Load Power Plant approved by ECNEC	
January 2009	Tender Invitation	18 months required for preparation of tender documents, review, revision and approval
November 2009	BER (Bid Evaluation Report) sent to World Bank for Concurrence	10 months for tender collection, evaluation
September 2010	Decision: EGCB will invite tender for 450 MW CCPP following World Bank guidelines. World Bank will provide additional fund required for 450 MW CCPP.	Decision changed – 11 months
October 2010	Tender Invitation	
October 2011	Under changed scenario: collection of bid proposal, evaluation, RDPP submission	12 months
May 2012	Contract Signing; Isolux Ingenieria S.A. and Samsung C&T Corp.	7 months

Table 6.12 Delay in implementation of the project: Financing activities

Date	Financing activities	Remarks
June 2007	As per PMPS-1995 Siddhirganj 2×150 MW Peak Load Power Plant approved by ECNEC	
November 2008	Loan agreement with World Bank for USD 221.10 Million; effective from 31-03-2009 and to be completed on 31-03-2018	17 months
November 2009	BER (Bid Evaluation Report) sent to World Bank for Concurrence	10 months for tender collection, evaluation
January 2012	Concurrence of World Bank on the draft contract document without ensuring provision for additional funds	Although there was a commitment of World Bank in the meeting on 02-09-2010 for additional financing, World Bank failed its commitment after 16 months in January 2012. As a result the project suffered from financing problems.
May 2012	Contract Signing; Isolux Ingenieria S.A. and Samsung C&T Corp.	4 months
December 2015	Loan agreement with World Bank for additional USD 176.71 Million	49 months

At the beginning, project has been taken for construction of a 2X150 MW peaking power plant at Siddhirganj in June 2007. But there were delays in tender processing and in financing. Later, in September 2010 decision has been made to change the type of the power plant. In the mean time,

there were a number of peaking power plant added in the power system and to ensure the maximum and effective use of natural gas and following the guidelines of World Bank, decision has been made to invite tender for 450 MW gas fired combined cycle power plant in place of 300 MW gas fired peaking power plant.

Rearranging and resizing of the equipment due to changing the type of the power plant, evaluation and accord of no objection on the bid evaluation reports of two sets of successive bid proposals and World Bank decision to additional funding required a long span of time.

(b) Situation/problem outside the scope of the contract.

There was a need for soil consolidation at the beginning of the project work. There are some difference in opinion in this regard between the contractor and EGCB. The issue is under the consideration of Dispute Board for decision. Issues like this are not specific or not clear in the contract which creates misunderstanding with the contractor delaying the project implementation and also financial issues are getting involved.

(c) Issues of managing the sub-contractor by the contractor

Managing the project work by the contractor created several problems from the very beginning of the project. The main sub-contractor General Electric is not present at site at the stage of starting the gas turbine because of their dues have not been cleared by the contractor. Therefore, gas turbine can not be started until General Electric is present at site and at the same time progress of works for combined cycle become limited. Communications with the contractor is continued to bring General Electric and other sub-contractors at site.

(d) Failing Target of Commercial Operation Dates (CODs) of the Contract

As per contract the commercial operation date (COD) for simple cycle was 27 May 2014 and COD for combined cycle was 27 March 2015. But the EPC contractor proposed in February 2016 the COD for simple cycle on 26 May 2016 and COD for combined cycle on 17 March 2017 after changing the dates for 17 times from the beginning of work. But it seems from the real scenario that it would not be possible. There are delays in every stages of the work and lack of management initiatives to meet the target from the EPC contractor's side. Their performance is not satisfactory. It may be mentioned here that to appoint an EPC contractor tender document was prepared as per PPA and the procurement guidelines of the World Bank and tender notice was published following PPR-2008. After evaluation of the submitted bid proposals by a duly formed evaluation committee selection of the EPC contractor was made and subsequently a contract was signed. Yet the performance of the contractor is not satisfactory as seen during the execution of the project. For example, failure to achieve target due to slow progress, sudden seizure of all works and leaving the country, sub-contractor's failure to be present at site due to lack of capability of managing the sub-contractors etc.

(e) Problems building residential facility for the personnel to be engaged in operation and maintenance works

The residential and non-residential civil works as approved in the RDPP can not be completed now – after receiving required land from BPDB tendering and other related activities will be started. Because the issue not being settled even at the end of the project implementation, the operation and maintenance works may be affected.

(f) Problems relating to project management

1. There are provisions for 19 officers and 22 staffs for implementation of this project as per RDPP. 3 officers and 6 staffs were posted in the month when the contract was signed with the EPC contractor. About 6 months later in October 2012, 6 more officers were posted and further about 1 year later in October 2013, 2 more officers and only 1 staff were added. Having sufficient human resources duly been posted in project office sustainable speed in the project work can be achieved and many complexities can be avoided up to the last, particularly when the personnel with the logistic facilities (office facilities) are arranged and maintained. In fact, complexities arising out of the want of human resources at the beginning continue and create more complexities at the end.

2. Human resources engaged in project work are required to do additional work and even in the weekly holidays and other holidays most of the time. In this case, there is no incentives/compensation provisioned in the RDPP for the additional works performed. Generally there are power plant allowance for working in the power plant area being considered as a hazardous area. In spite of working in the power plant area personnel engaged in project work sometimes get less allowance for not getting power plant allowance.

## **6.4 Probable Solutions to the Project Implementation Problems**

To resolve the above mentioned implementation problems of the project “Siddhirganj 335 MW Combined Cycle Power Plant (2nd revised)” proper attention should be given to the following matters:

(a) Excessive delay in making coordinated decision during implementation of the project: The main reason is slow response of the development partner in the accord of concurrence and giving funding decisions. Although the issue is resolved finally with continued efforts from Energy Division and ERD to take decisions in due times, to get financial and economic benefit from the project, decision making and financing process should be resolved more earlier.

(b) The misunderstanding originated from the soil consolidation issue outside the scope of the contract should be resolved at the earliest.

(c) Necessary steps to be taken by EGCB and Energy Division so that the sub-contractor General Electric appointed by the EPC contractor be present at site for starting gas turbine at the earliest.

(d) What arrangements can be made at the respective stages for contractor selection, making contracts with contractor, managing and controlling contractor etc. so that the problems originated in the case of this project relating to the contractor can be avoided and the same may be defined more clearly after further study and analysis during preparation of bid documents, during ascertaining evaluation methods, and during making contracts.

(e) To accelerate the residential and non-residential civil works, necessary steps must be taken in particular. Since there are involvement of more than one organizations and/or stakeholders in making decision in this regard, clear instruction from the Energy Division or if required interministerial decision should be made for the implementation of the work.

(f) Experienced and expert human resource should be posted as required to facilitate the project work together with ensuring all logistic support from the beginning and should be maintained up to the end of the project.

(g) In normal conditions additional works are required to be done by the project people for the interest of the project (in weekly and other holidays and after the office hours most of the times) for which

sufficient incentives and compensations may be provisioned in the project proposals. No such arrangements can be made for this project at this stage of implementation.

(h) All concerned should contribute wholeheartedly to resolve any type of problem originated during implementation of the project.

## 6.5 Delays in the Project Implementation Works of EPC Contractor

At the beginning of construction works of the project by EPC contractor, there was a need for soil consolidation works which was not included in the contract. Project has been delayed for soil consolidation works and Force Majeure for example, hartal, blockade, bar in river transport etc. EPC contractor prepared a list of delays of these types and included in their reports and demanded extension of at least 662 days in their March 2016 reports. EGCB do not agree with EPC contractor's demand for delays. EGCB also do not agree with the duration of soil consolidation works and its technical issues. There is a Dispute Board to resolve all these types of issues. In the mean time, soil consolidation issue is awaiting decision from the Dispute Board.

Based on the above mentioned causes and the force majeure, direct financial loss can not be ascertained but at 80% utilization of capacity about 42 lakh units of electricity can be generated daily in simple cycle operation (218 MW) and 64 lakh units of electricity can be generated daily in combined cycle operation. An idea of effective daily loss can be estimated from this calculation. Besides, due to the delay in implementation of the project, there are pressure on overhead cost, increase in the amount of interest during project implementation period, overall negative impact on the economy for not getting expected electricity in time, negative impact on the implementation of national level plans. A target of financial revenue of Taka 569.07 crores and an economic revenue of Taka 756.87 crores in the financial year 2015-16 has been stated in the RDPP for financial and economic analysis.

Table 6.13 Revenue for the purpose of Financial and Economic Analysis

Year	Revenue (considering 80% plant factor) in Lakh Taka	
	Financial	Economic (FinancialX1.33)
2015-2016	56907	75687
2016-2044	71134	94609

At this stage, there is every endeavour to finish the project by scheduled time i.e., by June 2017 if overall local situation and other conditions are in favour but that would not be easy. In this case, a collective and wholehearted cooperation would be necessary from all concerned - individuals involved in the project, from the organizations, stakeholder ministry and respective divisions.

## Chapter-7

### Comparison with Other Similar Power Plants

A comparison has been made with the works of Haripur 412 MW Combined Cycle Power Plant only (table 7.1), although initiative was taken to compare similar construction works of public and private sector power plants but accurate data from private sector power plant is not always available on request. It is sufficient to consider this type of comparison to ascertain the technical efficiency and standards relevant to this project. In public sector power station construction works tenders are required to be invited and subsequently processed which take time. On the other hand, in the case of private sector, these types of tender processing is not required. Therefore, less time equal to the tender processing times at least is required in the case of private sectors in general. Also the pay structure of private sector plants is higher than that of public sector plants which may result in more speed in implementation and other works.

Table 7.1 Comparing the Project with Haripur 412 MW CCPP

Sl. No.	Description/Item	Haripur 412 MW CCPP	Siddhirganj 335 MW CCPP	Remarks
1	Implementation period for similar plants	14 February 2011 to 06 April 2014; 2 years 2 months	Contract signed 27 September 2012, ongoing	Implementation period longer
2	Cost for similar plants	Taka 370379.15 Lakhs	Taka 414415.35 Lakhs	Cost comparatively higher
3	Quantity of natural gas required for per unit production of electricity	0.225 cu-m/unit	0.1918 cu-m/unit	
4	Arrangement for waste disposal	Present	Present	
5	Name of the natural gas supplier	Titas	Titas	
6	Country of origin for Turbine, Generator, Engine and Transformer	GT- MHI Japan GTG – MELCO Japan ST + STG – FUJI Japan Transformer – ABB India	GT- GE USA GTG- GE USA ST, STG- GE USA Transformer- ABB Poland	
7	Efficiency of Installed Generators	Overall – 57.5%	Overall-53.5%	Lower
8	Heat Rate of installed Generators	6240 kJ/kWh	6726.5 kJ/kWh	Higher

In table 7.2 contract prices and implementation periods and in table 7.3 different indices of combined cycle power plants at different locations have been compared.

Some important implementation dates and contract price of Siddhirganj 335 MW Combined Cycle Power Plant has been compared with those of Ashuganj 450 MW Combined Cycle Power Plant (North), Ashuganj 450 MW Combined Cycle Power Plant (South) and Haripur 412 MW Combined Cycle Power Plant in the following table.

Table 7.2 Comparisons of Contract Price and Implementation Period

Name of Power Plant	Commencing Date	Completion Date	EPC Contract Price (in crores Taka)
Siddhirganj 335 MW CCPP	September 2012	-	2520
Haripur 412 MW CCPP	February 2011	April 2014	2735
Ashuganj 450 MW CCPP (North)	December 2013	-	2248
Ashuganj 450 MW CCPP (South)	March 2013	January 2016	-

A Comparison has been made for different indices of Siddhitganj 335 MW Combined Cycle Power Plant with Power Plants at different locations in the following table.

Table 7.3 Comparing indices of Siddhitganj 335 MW Combined Cycle Power Plant with Power Plants at different locations

Name and Location of Power Plant	Capacity (MW)	Thermal Efficiency (%)	Contract Price (Approx.), Million USD	Installation Cost per kW, USD	Installation Date and other Information
Siddhirganj 335 MW CCPP	335	53.5	322	961	Sept. 2012
Haripur 412 MW CCPP	412	56	349	847	Feb. 2011
Ashuganj 450 MW CCPP (North)	450	58.7	286.8	637	Dec. 2013
Ashuganj 450 MW CCPP (South)	450	57	-	-	Mar. 2013
Pakistan Electric Power Co., Sindh	747	54.4	616	854	June 2014, Dual Fuel
Dominion Virginia Power, USA	1360	59.5	1300	955	Aug. 2013
FGE Power, Texas, USA	1500	59.5	1200	800	2015

## Chapter-8

### Comments from Project Related Persons as well as from General Public of the Project Area and Focused Group Discussion (FGD)

#### 8.1 Analysis of the Comments/Information collected from the Project Director and other Project Related Persons regarding implementation of the Project and the Problems.

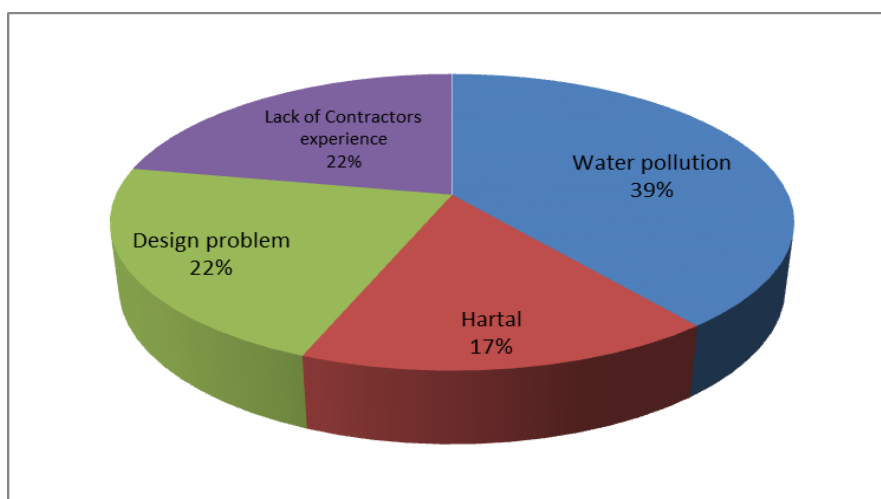
A general questionnaire was prepared with 10 questions consisting of implementation problems, delay in implementation and other relevant issues of 'Siddhirganj 335 MW Combined Cycle Power Plant (2<sup>nd</sup> revised)' project. Interviews are conducted with 18 engineers/officers with this questionnaire. They are requested to provide comments on whether there are problems and types of problems if there is any, causes of delay in implementation, comments on implementing these types of project by alternate and local means, comments on proposal for constituting "Core Technical Committee" etc. An analysis on their comments has been attached with annexure-6.

Besides, comments from the project director have been collected in a prescribed and approved form (attachment-6). Different data and information of the project, problems in project implementation and recommendations, causes of delays in project implementation, comment on the implementation of similar projects by alternate and local means and comment regarding the proposal for creating "Core Technical Teams" have been collected.

##### 8.1.1 Problems Regarding Project Implementation

Analyzing the collected data/comments, the main problems in implementation of the project as indicated are (a) Hartal, accident, political unrest etc. (16.7%), (b) Design problems – some electrical drawings approved which are not consistent with the actual conditions and which will affect operation and maintenance works (22%), (c) lack of experience/attention of the contractor to implement this type of large project (22%), (d) water pollution of the river etc.

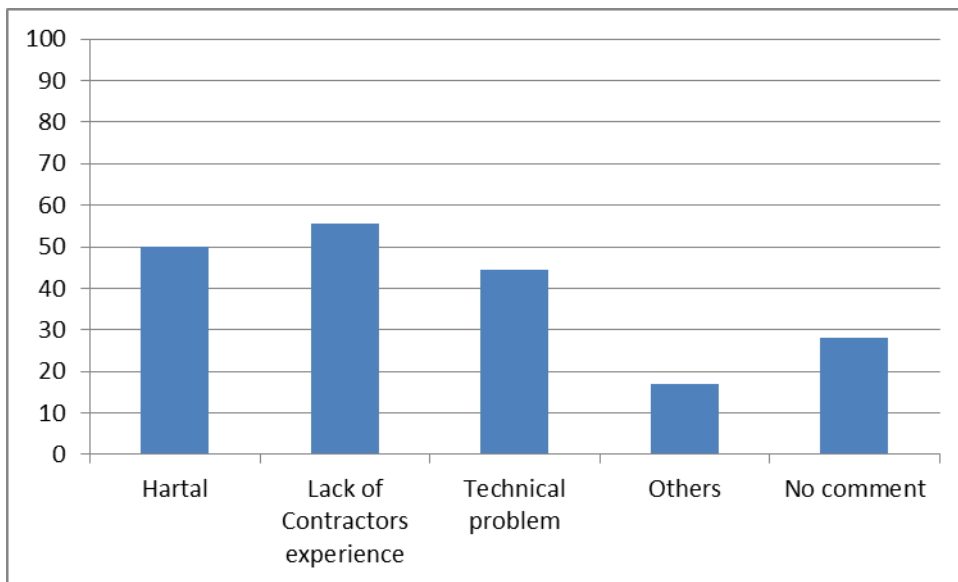
Figure 8.1 Types of Problems in Project Implementation



### 8.1.2 Causes of Delay in Project Implementation

The causes of delay as indicated in the response of the respondents are (a) Hartal, political unrest etc. (50%), (b) Lack of experience/ attention of the contractor in implementing large projects (55.55%), (c) Mismanagement of local subcontractors (5.55%), (d) lack of good relations between client and the contractor (5.55%), (e) technical problems e.g., soil consolidation, transportation, equipment hiring, the work was being stopped suddenly etc.

Figure 8.2 Causes of Delay in Project Implementation



### 8.1.3 Regarding Combined Cycle Power Plant Concept

Whether the combined cycle power plant concept should continue to be used in future, comments are (a) thinks logical (94.45%), (b) do not think logical (5.55%) for the limited/scarce supply of gas.

The thermal efficiency of combined cycle power plant is very high compared to any other types. Therefore, fuel can be saved if combined cycle power plant is constructed. The temperature of the exhaust gas to air from combined cycle power plant is very low, so this type of power plant is environment friendly.

Planning power plant mix for the country is necessary considering types of electricity demand, base load/peak load, size of power system etc.

### 8.1.4 Advantages and Disadvantages of Combined Cycle Power Plant

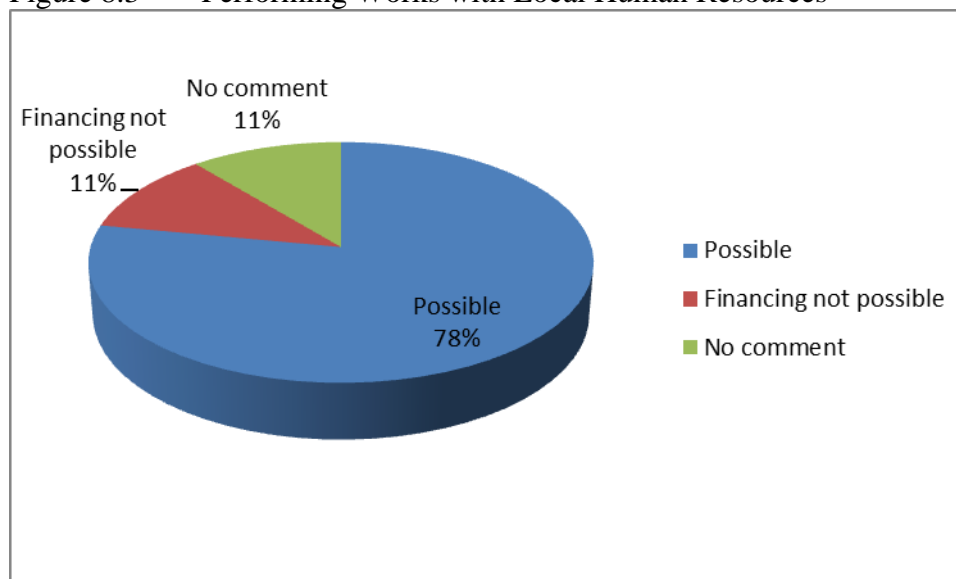
Respondents' comments regarding combined cycle power plant are – (a) 100% thinks that the efficiency of combined cycle power plant is higher, (b) per unit cost of generation is lower (44.45%), (c) capital cost is large (44.45%), (d) complex and requires more maintenance cost (27.78%), (e) requires a lot of water (11.11%), (f) project implementation is costly (11.11%)



### 8.1.5 Regarding Project Implementation with Local Human Resources

100% respondents think that project of this type can be completed with local human resources. 6.67% think further that with foreign experts/consultants the quality of the project will increase.

Figure 8.3 Performing Works with Local Human Resources



But the following points to be noted:

Under the present condition there are no expertise and capacity in the government organizations to complete construction works of a power plant. The long decision making process is one of the main cause of this. There may be complexities created in selecting expert and experienced engineers/personnels without any outside influence. Inconsistencies/complexities should also be avoided to provide required logistic and other facilities.

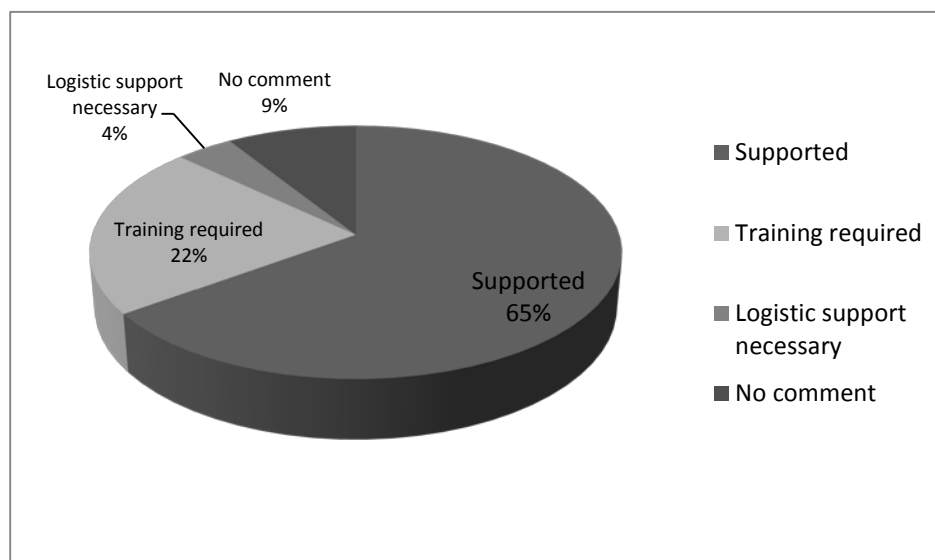
Regarding black smoke and Carbon-di-Oxide, 27.78% respondents comments that using modern technologies these can be maintained at the lowest level and this project has those arrangements.

### 8.1.6 On the Proposal for Constituting Core Technical Teams

83.33% respondents support the proposal for Core Technical Teams consisting of efficient engineers and technicians. There are some recommendations from their comments as follows:

- (a) Capabilities should be the only standard for constituting Core Technical Teams. It must be free from nepotism and other influences;
- (b) There should be separate pay scale;
- (c) Arrangement for extensive training for them home and abroad.

Figure 8.4 Proposal for forming Core Technical Teams



There are a large number of expert and experienced engineers involved in power plant construction as well as operation and maintenance in home and abroad with success. Power plant construction can be completed without appointing foreign contractor and with the help of well-thought and well-planned selection of these expert and experienced engineers. It is to be noted that foreign contractors at present get most of their works done by local sub-contractors and with local human resources. In this scenario, if teams for power plant construction are formed with expert and experienced engineers/personnel power plant construction works can be completed with own human resources. It will be beneficial to the power system as well as for the country to form this type expert technical teams as early as possible.

- 8.1.7 The respondents comment that the per unit generation cost is lower in combined cycle power plants. 5.55% respondents think that there will be a cost saving if the river water is relatively free from pollution.

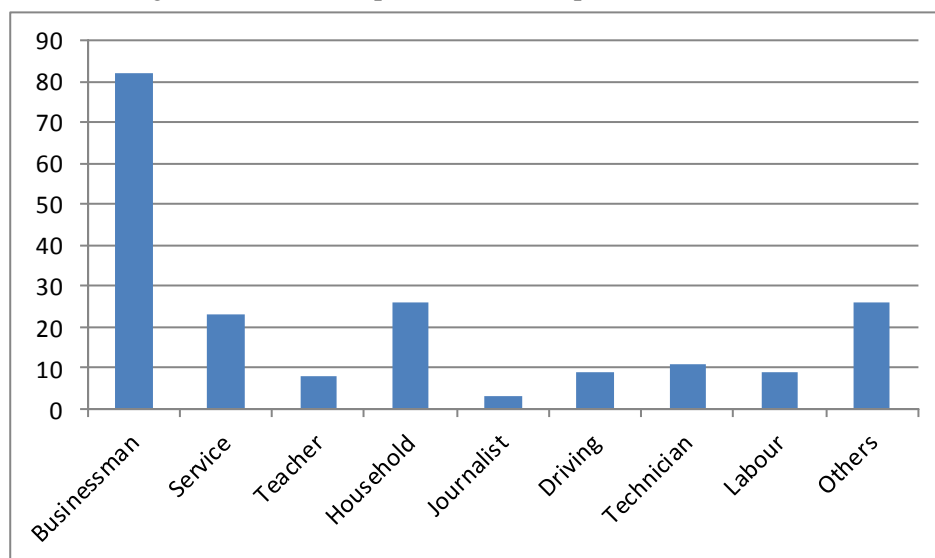
## 8.2 Comments from Residents of Different Professions around Project Area

There is no statistical population (individual or enterprise) as direct beneficiary of the project “Siddhirganj 335 MW Combined Cycle Power Plant (2nd Revised)”. Comments were collected from engineers and officers involved in the project which will help the monitoring work using a general questionnaire reflecting different issues including problems during project implementation, causes of delays, impact of the project on environment, threats, opportunities of the project etc. Also there was a need for collecting comments from the inhabitants belonging to different classes and occupations of the project area for monitoring different issues of the project. With a view to do this a questionnaire was prepared after a discussion with the Chief (Industry and Energy Sector) and 200 persons living in the area around the project at Siddhirganj were interviewed and their comments were collected and analyzed. The respondents were selected randomly. Comments were collected from the persons present at the hatbazars around the project, from the educational institutions, clinics, etc. For this reason number of male respondents are larger than that of females.

Largest among the respondents are businessmen (41.5%). Comments from the owners of small and medium business, small food shops etc. have been collected. Besides, there were service holders (11.5%), household works (13%), teachers, engineers, lawyers, sales representatives,

journalists, nurses, rickshaw pullers, drivers, technicians, garment workers, daily labours, NGO workers, tailors, kabiraj, barbar, farmers, students etc.

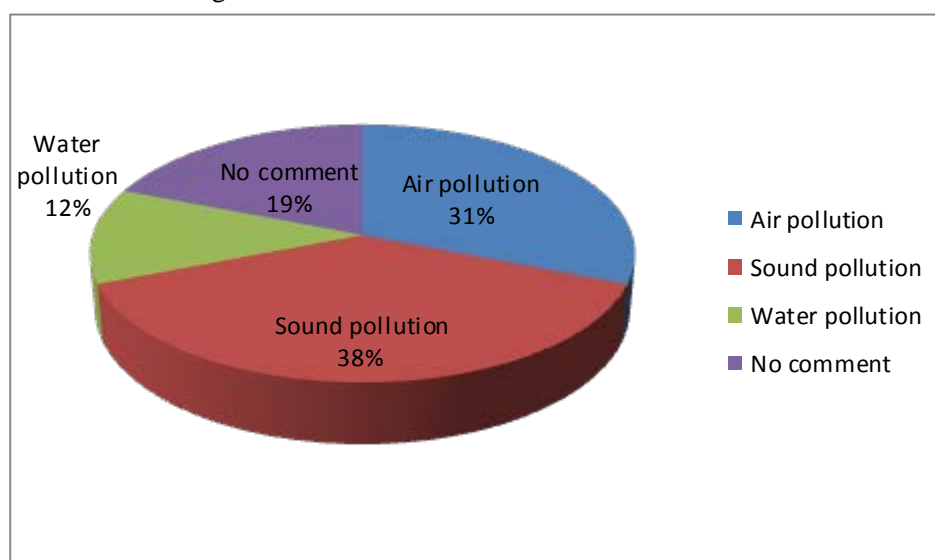
Figure 8.5 Occupation of the Respondents



### 8.2.1 Analysis of Data/Comments collected from Local People in the Project Area

95.5% believe that they will not be affected by this project implementation. 94% did not find any problem in implementation of the project, 6% thinks there are delays in implementation. 57% consider some threat for environment. 40% thinks there will be air pollution, 48.5% thinks there will be sound pollution, 16% about water pollution.

Figure 9.7 Threats for Environment Pollution

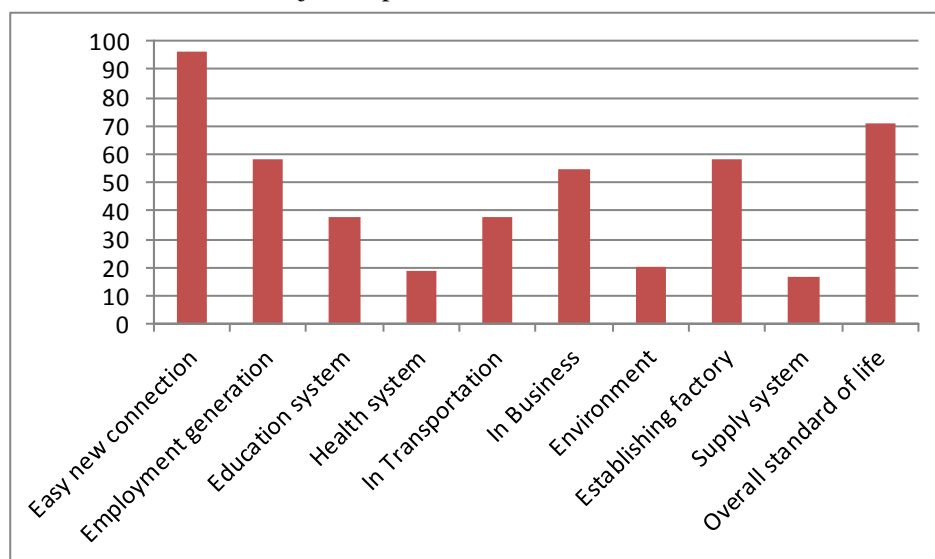


95% thinks that the project after implementation will contribute to the economic development of the area. 86% believe that it will contribute to the individual occupations and in daily life. 99.5% think that it will improve overall power system. 30% consider an employment generation but 67.5% did not consider that.

94.5% respondents consider more similar projects to be implemented in this area. Besides, respondents think that the project will contribute in more availability of electricity (96%), in

employment generation (58.5%), in education (38%), in health system (19%), in transport (38%), in business (55%), in environment (20%), in establishing factory (58%), in supply system (16.5%) and in overall standard of life (71%).

Figure 9.10 Comments for contribution on different Sectors as a result of the Project Implementation



Analysis of the data/comments collected from the local people of the project have been attached in annexure-6

### 8.3 Focus Group Discussion (FGD)

A focussed group discussion was held at the corporate office of EGCB on 26 April 2016 between engineers and officers of 4 from BPDB and 2 from EGCB. In the discussion almost all of the participants made comments that optimum use of natural gas is being ensured in the implementation of this project. The project will contribute to meet demands for electricity and contribute to minimize load-shedding at the lowest level. It will help increasing stability and reliability of the national grid system and will help decreasing transmission loss by local production. The project being nearer, electric supply of Dhaka city will be made easier by commissioning of the plant.

### 8.4 Local Workshop

A local workshop was arranged on 28 April 2016 on in-depth monitoring work of the project at Siddhirganj. At the workshop Chief (Industry and Energy Sector) of OMED with officers of different levels, engineers and other officers from EGCB and other dignified people were present. The participants present in the workshop discussed the project and expressed their comments. The comments obtained in the workshop are summarized as follows:

- ☐ Combined Cycle Power Plants are gas saving. Further projects of this type are logically justified.
- ☐ This project is not harmful to the environment.
- ☐ This project will help increase the availability of electricity
- ☐ Many are being interested to set up factory on the project area.
- ☐ Supply systems are improving due to this project.
- ☐ The overall standard of life in the project area will improve due to this project.

## Chapter-9

### The Strengths and Weaknesses of the Project

#### 9.1 SWOT Analysis

The site of “Siddhirganj 335 MW Combined Cycle Power Plant (2nd revised)” has been visited and specifications of the machinery and equipment of the main components of the project have been examined, related data and information have been collected from the office of the project director and studied. Comments from the project related persons and from the general public of the project area have been collected and focus group discussions have been conducted. Besides, secondary data have been collected from different sources. The study results have been described in chapter three to eight. The strengths and weaknesses have been determined based on the collected data and information.

#### 9.2 Strengths

- ☐ Best utilization of natural gas by implementing combined cycle concept;
- ☐ The thermal efficiency of combined cycle power plant is more than that of any other types of gas-based power plant. Therefore, by construction of combined cycle power plants fuel may be saved;
- ☐ Stability and reliability of the grid system will increase;
- ☐ It will help decrease transmission loss by local generation;
- ☐ Most modern technology is used to protect environment in this project; and
- ☐ The temperature of the exhaust gas of a combined cycle power plant is very low. So, this type of power plants are environment friendly.

#### 9.3 Weaknesses

- ☐ 18 years gas supply contract has been signed with Titas Gas on 18 August 2015. Since there is no dual fuel system in this power plant, generation will be affected in the limited or no supply of gas;
- ☐ Project has been delayed from the beginning due to delay in decision making and financing;
- ☐ Residential civil works for the operation and maintenance people depend on getting land from BPDB. There is delay in making decision regarding this;
- ☐ Sometimes project is delayed or financial involvement arises as a result of conflicts with the contractor due to the absence of specific clauses on some matters (complexities of this type arose regarding soil consolidation works at the beginning which was not included on the contract); and
- ☐ There may be increase in temperature, air pollution, sound pollution and water pollution in the local environment.



#### 9.4 Opportunities

- ☐ The project will help implementing “Electricity for all by 2021” program of the government.
- ☐ Relatively better utilization of natural gas;;
- ☐ Generation of electricity at relatively low cast;
- ☐ There will be employment generation;
- ☐ Income and standard of life of the people in the project will continue to increase; and
- ☐ The project will contribute to the economic and social development in the project area.

#### 9.5 Threats/Challenges

- ☐ Limitations in the required supply of gas but there is no duel fuel system;
- ☐ Arrangement of residential facility for the operation and maintenance people can not be made available till now;
- ☐ Combined Cycle Power Plant requires a lot of purified water which is costly. It is a threat that the water of Sitalakshya river is getting polluted day by day. Initiatives has to be taken by all concerned to prevent water pollution; and
- ☐ The temperature of the surrounding atmosphere will increase due to the presence of several power plants in Siddhirganj and Haripur areas.

# Chapter-10

## Recommendations and Conclusion

### 10.1 Technical Issues

- (a) There is no option for dual fuel system other than using natural gas in the design of this combined cycle power plant. So, in case of limited supply of natural gas the generation of this power plant will also become limited or even can stop generation. Whenever possible this type of power plant must be designed and implemented with an arrangement of dual fuel provisions, although provisioning for dual fuel system will require additional space, additional equipment and additional funds.
- (b) The efficiency of simple cycle power plant is 35%-40% and in some cases less than 30%; on the other hand the efficiency of combined cycle power plant is 55-60%. Considering the national interest of Bangladesh and securing the reserve of natural gas construction of combined cycle power plant is more justified for the generation of electricity.

### 10.2 Regarding Construction Works of EPC Contractor

- (a) Installation works of gas turbine with auxiliaries, gas turbine generator, and main transformer have been completed by 18 February 2016. All related works of gas turbine generator have been finished by 26 March 2016 and gas turbine main transformer has been tested with back charge on 19 February 2016. Simple Cycle commercial operation of the project can be started now. But the work is pending and can not be started because the subcontractor General Electric of the EPC contractor is not present at the site till now. As a result -
  - (a) Project implementation is delayed further;
  - (b) Overhead cost and interest during construction etc. are increased;
  - (c) Affects successive stages of project implementation;
  - (d) Above all, we are getting deprived of electricity;
  - (e) Moreover, performance of the machineries may be decreased for being unused for long times.

The issue must be settled with contractor as early as possible and commercial operation of simple cycle should be started. Initiative should be taken by all concerned in this regard.

- (b) Similar to the delays in decision making and in procedural activities there are delays in financing for project implementation. Again there is a delay more than 13 months at the beginning of the project work for soil consolidation work which is outside the scope of the contract. Finally there is delay for the subcontractor General Electric not being at site to start commercial operation of the simple cycle. There are delays by contractor also for not

executing works in time and for lack of their initiative to achieve target. It is necessary to start commercial operation of simple cycle without further delay by deploying required and appropriate human resources. Proper initiative to be taken by EGCB, Energy Division and all concerned in this regard.

- (c) The performance of the contractor is not satisfactory because of their delays in execution, failing to achieve target of finishing works by taking proper initiative at proper time, suddenly leaving country by stopping on going works, etc. Contractor's lack of experience and lack of capability should be taken into account in further detail during making selection in future.
- (d) There are delays for the EPC contractor in this project. More attention to be given to find ways of selecting and accepting more qualified contractor.

### 10.3 Regarding Facilities that Support Operation and Maintenance Works

- (a) It is important to make arrangement for residential and nonresidential facility for the personnel to be engaged in the operation and maintenance of the power plant. The operation and maintenance work of the power plant is a round the clock duty. Moreover, specifically trained human resources are required for operating power plants, alternate of which can not be made available in most cases. Therefore, construction of residential facilities attached to the power plant is essential. There is provision for this in the RDPP. But there is no EGCB's land in the project area, so EGCB is trying to have land leased from BPDB to construct this type of residential facility. The issue should be resolved as early as possible and the construction of residential facilities should be started at the earliest.
- (b) Timely procurement of goods and machineries for the operation and maintenance of the power plant to be ensured with proper storage and proper monitoring.

### 10.4 Regarding Management of the Project

- (a) The project director has been changed for 5 times from the beginning of the project. Project implementation is hampered by changing project director. Hence, whenever possible project director should not be changed during project implementation.
- (b) Many complexities can be avoided by posting human resources and other logistic facility at the beginning of the project and as early as possible. Generally, complexities at the beginning of the implementation sustain throughout implementation and creates more complexities at the end of the project.
- (c) The human resources involved in the project work are required to work for additional times even in the weekly holidays. But in this case, there is no provision for incentives/compensations for extensive additional works. Besides, in some cases the project people get less allowances. Power station allowance may be considered for officers/staffs in the power station construction project and provision may be made in



new development project proposals. They will work with more initiative and be more encouraged to work during project implementation.

## 10.5 Surroundings and Environment around the Project

- (a) The fuel exhaust and the black smoke and Carbon-di-Oxide and waste disposal from the plant are harmful to the environment. The temperature of the fuel exhaust gas in this plant is 99-100 degrees Centigrade which is much lower than the temperature of the exhaust of simple cycle plant (507 degrees Centigrade). Besides, DLN 2.0+ Emission System is used in this project to keep the harmful effect at the lowest level. Therefore, whenever possible the plant should not be run on simple cycle.
- (b) There is a school near the installed heavy equipment of the project. Although the measured parameters like sound level, vibration, temperature etc. are acceptable within the plant those are not valid for schools. Moreover, for any type of accident hazards the school will be in great danger. The school must be relocated to some other safe place. There is provision of Taka 2765 lakhs for “Support to implementing agencies including construction of primary school and other facilities” in the RDPP.

## 10.6 Clarity of Expression in the Contract Clauses

At the beginning there was a need for soil consolidation for the project site. Because there was not a clear and detail instruction in the contract clauses this situation created complexities and management problem during project implementation. Therefore, it is necessary to incorporate clauses in the contract clarifying and detailing issues of these types.

## 10.7 Preparing Future Project Proposals for Power Plant Construction

- (a) More importance may be given for constructing large coal based power plants referring to the outlines in the vision 2021, Sustainable Development Goals (SDG) and the Seventh Five-Year Plan. Also, importance may be given for further using of renewable sources of energy.
- (b) Planning power plant mix for the country is necessary considering types of electricity demand, base load/peak load, size of power system etc. Following the plan a required number of combined cycle power plants may be added to the power system.
- (c) EGCB may take required initiatives to implement such projects in future by procuring required machineries/goods from the manufacturer with the help of minimum number of foreign experts and executing with help of local engineers and technicians. A large number of expert and well experienced Bangladeshi engineers are involved successfully in the construction and operation and maintenance of power plants in home and abroad. Construction works of power plant can be done without foreign contractor if initiative is taken for the implementation with well thought and well planned selection of these expert and experienced engineers.

## 10.8 Miscellaneous

- (a) Energy Division/EGCB can take initiative to constitute “Core Technical Teams” with capable engineers and technicians from public and private sectors. During selection of engineers and technicians, due concern and unbiased attention need to be given so that experienced and expert people can be included in the team. Besides, retired and expert engineers may be included in these teams. Selected engineers and technicians are to be trained further in home and abroad to make them more expert.
- (b) For transmission of generated electricity throughout the country transmission lines of most modern technology and of more capacity (e.g., 400 kV and greater) to be constructed.

## Conclusions

The demand for electricity is increasing in parallel with the socio-economic development of Bangladesh. On the other hand, a well-planned and long-term power system plays an important role in socio-economic development. For this a healthy power generation system is expected which will be reliable, environment-friendly and at the same time low-cost. In this case, combined cycle power plant is particularly useful and appropriate. This project was approved in principle at the ECNEC meeting of June 2007. In the mean time, nine years after that in 2016 generation, transmission and distribution system have improved and load-shedding and system loss at present are not as much as those in 2007. So, possibility of facing similar ups and downs during preparation of similar new project proposals and implementing them is almost nil at present. Still, whatever learnt from the activities of this project may be noted during launching new projects. Considering all of these, the objective of electricity generation system of Siddhirganj 335 MW Power Plant may be considered successful.

# Annexure-1

- Collected data for component-wise implementation of the project  
Attachment-1 (Up to February 2016)
- APP
- Collected data for specification verification of the machineries/goods (attachment-4)
- Collected data for monitoring quantities of machineries/goods (attachment-5)
- Monitoring table with collected information for tendering process whether the procurements were done following PPA-2006 and PPR-2008 (attachment-6) (14 procurement contracts)
- Collected data to measure efficiency of turbine generator (attachment-9)
- Collected comparative data from similar public/private electricity generating enterprizes (attachment-10)
- Estimated investment as per RDPP
- Meeting minutes dated 02-09-2010 between the govt. and the World Bank



## Collected data for component-wise implementation of the project

সংযোজনী-১

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কম্বাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক  
প্রকল্পের অঙ্গুয়ারী বাস্তবায়ন অবস্থা সংক্রান্ত তথ্য সংগ্রহের ছক

(In Lakh Taka)

Sl. No.	Work components as per PP (With quantity)		Estimated Cost	Achievement upto last June-2015		Target of the current year (FY-2015-2016)		Progress upto the month of February-2016 of the current year		Cumulative Progress upto the reporting month	
				Financial	Physical (% of the component)	Financial	Physical (% of the component)	Financial	Physical (% of the component)	Financial	Physical (% of the component)
1	2		3	4	5	6	7	8	9	10=4+8	11=5+9
1	Establishment—(GoB)	LS	14.18	14.18	100.00					14.18	100.00
2	Establishment—(EGCB)	LS	1,641.70	575.39	68.40	372.50		190.96		766.35	68.40
3	Transport-Vehicles (EGCB)	5Nos	252.27	73.77	32.00	117.00				73.77	32.00
4	Transport-Vehicles (GoB)	2Nos	69.26	69.26	100.00					69.26	100.00
5	Machinery & Equipment	1 Lot	202,407.49	155,723.32	81.50	17,500.00	17.50	3,013.70	7.45	158,737.02	88.95
6	Design of Power Plant System	1 Lot	14,666.00	9,282.35	81.20	2,000.00	18.00	260.58	6.15	9,542.93	87.35
7	Civil Works -Turnkey	1 Lot	14,485.09	2,335.08	60.00	15,000.00	39.00	381.19	7.50	2,716.27	67.50
8	Erection & Commissioning of whole power plant	1 Lot	24,219.10	17,978.42	40.00	9,500.00	50.00	2,506.24	27.00	20,484.66	67.00
9	Service for Guarantee Engineer & 1st Inspection	1 Lot	1,494.18	-	-					-	-
10	Duct Bank	1 Lot	324.23	324.23	100.00					324.23	100.00
11	Traning (Local & foreign.)	65/60P-M	2,672.22	-	-					-	-
12	Owner's Engineer	1 Lot	7,110.00	871.11	30.00	2,645.00	36.00	1,114.73	30.00	1,985.84	60.00
13	Initial Cost of O&M Operator for 2x120 MW PPP	1 Lot	4,661.00	2,468.68	40.00	1,300.00	20.00	483.18	13.00	2,951.86	53.00
14	Initial Cost of O&M Operator for 335 MW CCPP	1 Lot	6,912.50	-	-	240.00				-	-
15	Civil Works –Residential	7097sqm	2,135.40		-					-	-

16	Civil Works –Non-Residential	Lot	707.24	0.49	0.12					0.49	0.12
17	MIS for EGCB	1 Lot	9,045.50		-	3,500.00		240.20	6.00	240.20	6.00
18	LTSA Service	1 Lot	20,050.20	-	-					-	-
19	Support to Implementing Agencies including Construction of Primary School & other facilities	1 Lot	2,765.00								
20	Legal Fees (Dispute Board, Arbitration, etc.)	1 Lot	200.00		-					-	-
21	Fuel for intial run	LS	2,134.84		-					-	-
22	Charge of electrical energy during construction	LS	9.00		-					-	-
23	IDC	Ls	21,361.28	1.14	0.01					1.14	0.01
24	LC Charge	LS	7,576.50	4,200.82	70.00		14.00			4,200.82	70.00
25	Custom duty, Taxes & VAT	LS	24,812.97	23,000.00	85.00					23,000.00	85.00
26	VAT& AIT		23,424.15	11,489.76	50.00		30.00			11,489.76	50.00
27	Physical contingency	LS	3,464.00	6.24	0.22					6.24	0.22
30	Price contingency	LS	15,800.00		-					-	-
	<b>Total</b>		<b>414,415.35</b>	<b>228,414.24</b>	<b>69.67</b>	<b>52,174.50</b>	<b>20.01</b>	<b>8,190.78</b>	<b>7.90</b>	<b>236,605.02</b>	<b>77.57</b>

**Annual Procurement Plan (Goods) for 2015-2016 (On going)**

**Ministry/Division: Power Division, Ministry of Power, Energy and Mineral Resources**  
**Procuring Entity Name & Code: Siddhirganj 335 MW CCPP**  
**Project, Code: 9636**

**Name of Project: Siddhirganj 335 MW CCPP Project**  
**Implementation Period: January 2009- June 2017**

Project Costs(In Lac Tk)	
Total	423947.56
EGCB	35827.9
GOB	199812.37
PA	188307.28

Proposed Allocation 2015-16 (In Lac Tk)	
Total	52000.00
Taka	27000.00
Project Aid	25000.00

Exchange Rate: 1 USD=82.45 BDT	
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Package No	Description of the Procurement Package	Unit	Quantity	Procurement Method & Type	Contract Approving Authority	Source of Fund	Total Estimated Cost in Million Tk	Time Code for Process	Not Use d in Goods	Invite/Advertise Tender	Tender Opening	Tender Evaluation	Approval to Award	Notification of Award	Signing of Contract	Total Time to Contract Signature	Time for Completion of Contract	Estimated Cost in million Tk for the year 2015-16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
GD1	Machinery & Equipment with associated civil works (Turnkey)	Lot	1	ICB (Single Stage Single Envelop)	EGCB Board	WB	30272.02	Planned Dates		23/09/2010	23/11/2010	16/12/2010	30/12/2010		13/01/2011			4400
								Planned Days		0	60	33	14		14	121		
								Actual Dates		13/10/2010	23/12/2010	13/01/2011	10/11/2011	10/11/2011	28/05/2012			

Annual Procurement Plan (Goods) for 2015-2016 (On going)																		
Ministry/Division: Power Division, Ministry of Power, Energy and Mineral Resources																		
Procuring Entity Name & Code: Siddhirganj 335 MW CCPP Project, Code: 9636																		
Name of Project: Siddhirganj 335 MW CCPP Project																		
Implementation Period: January 2009- June 2017																		
												Project Costs(In Lac Tk)						
												Total	423947.56					
												EGCB	35827.9					
												GOB	199812.37					
												PA	188307.28					
Package No	Description of the Procurement Package	Unit	Quantity	Procurement Method & Type	Contract Approving Authority	Source of Fund	Estimated Cost in Million Tk	Time Code for Process	Not Used in Goods	Invite/Advertiser Tender	Tender Opening	Tender Evaluation	Approval to Award	Notification of Award	Signing of Contract	Total Time to Contract Signature	Time for Completion of Contract	Estimated Cost in million Tk for the year 2015-16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
GD2	Core Network Infrastructure Package-1	Lot	1	NCB	Managing Director	WB	11.85	Planned Dates		9/5/2013	9/12/2013	9/19/2013	11/27/2013	11/30/2013	12/7/2103			10.0
								Planned Days		0	7	7	69	3	7	93		
								Actual Dates		4/29/2014	5/27/2014	6/24/2014	8/21/2014	8/25/2014	10/23/2014			
GD3	Core Network Infrastructure Package-2	Lot	1	NCB	Managing Director	WB	22.90	Planned Dates		9/5/2013	9/12/2013	9/19/2013	11/27/2013	11/30/2013	12/7/2103			14.0
								Planned Days		0	7	7	69	3	7	93		
								Actual Dates		4/29/2014	5/27/2014	6/24/2014	8/21/2014	8/25/2014	10/23/2014			



Annual Procurement Plan (works) for 2015-2016 (On going)																		
Ministry/Division: Power Division, Ministry of Power, Energy and Mineral Resources																		
Procuring Entity Name & Code: Siddhirganj 335 MW CCPP Project, Code: 9636																		
											Project Costs(In Lac Tk)							
Name of Project: Siddhirganj 335 MW CCPP Project											Total	423947.56						
Implementation Period: January 2009- June 2017											EGCB	35827.9						
											GOB	199812.37						
											PA	188307.28						
Package No	Description of the Procurement Package	Unit	Quantity	Procurement Method & Type	Contract Approving Authority	Source of Fund	Estimated Cost in Million Tk	Time Code for Processes	Advertise PQ	Invite/Advertise Tender	Tender Opening	Tender Evaluation	Approval to Award	Notification of Award	Signing of Contract	Total Time to Contract Signature	Time for Completion of Contract	Estimated Cost in million Tk for the year 2015-16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
WD1	O&M Operator Service for Siddhirganj 2x120 MW Peaking Power Plant	Lot	1	ICB	EGCB Board	WB	699.66	Planned Dates		25/11/2009	23/02/2010	20/03/2010	28/10/2011	31/10/2011	13/12/2011			130
								Planned Days		0	90	25	580	3	43	741		
								Actual Dates		25/11/2009	23/02/2010	20/03/2010	28/10/2011	31/10/2011	12/13/2011			

Annual Procurement Plan (works) for 2015-2016																		
Ministry/Division: Power Division, Ministry of Power, Energy and Mineral Resources																		
Procuring Entity Name & Code: Siddhirganj 335 MW CCPP Project, Code: 9636																		
Name of Project: Siddhirganj 335 MW CCPP Project Implementation Period: January 2009- June 2017											Project Costs(In Lac Tk)							
											Total	423948						
											EGCB	35827.9						
											GOB	199812						
											PA	188307						
Package No	Description of the Procurement Package	Unit	Quantity	Procurement Method & Type	Contract Approving Authority	Source of Fund	Total Estimated Cost in Million Tk	Time Code for Process	Advertise PQ	Invite/Advertise Tender	Tender Opening	Tender Evaluation	Approval to Award	Notification of Award	Signing of Contract	Total Time to Contract Signature	Time for Completion of Contract	Estimated Cost in million Tk for the year 2015-16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
WD2'	O&M Operator Srvce for Siddhirganj 335 MW CCPP	Lot	1	ICB	EGCB Board	WB/EGCB	494.7''	Planned Dates		5/1/2015	7/23/2015	9/6/2015	9/20/2015	10/4/2015	11/3/2015			24.00
								Planned Days		0	83	45	14	14	30	186		
								Actual Dates		5/1/2015								
WD3'	Supply & Installation of ERP & EAM System	Lot	1	ICB	EGCB Board	WB	685.16'''	Planned Dates		4/28/2015	7/22/2015	9/6/2015	9/20/2015	10/4/2015	11/3/2015			350
								Planned Days		0	85	46	14	14	30	189		
								Actual Dates		4/28/2015								

**Procurement Plan (Service) for 2015-2016 (On going)**

Ministry/Division: Power Division, Ministry of Power, Energy and Mineral Resources

Procuring Entity Name & Code: Siddhirganj 335 MW CCPP Project, Code: 9636

Name of Project: Siddhirganj 335 MW CCPP Project

Implementation Period: January 2009- June 2017

Project Costs(In Lac Tk)

Total 423947.56

EGCB 35827.9

GOB 199812.37

PA 188307.28

Package No	Description of the Procurement Package (Service)	Unit	Quantity	Procurement Method & Type	Contract Approving Authority	Source of Fund	Estimated Cost in Million Tk	Time Code for Processes	Advertise EOI	Issue RFP	Technical Proposal Opening	Technical Proposal Evaluation	Financial Proposal Opening & Evaluation	Negotiation	Approval	Signing of Contract	Total Time to Contract Signature	Time for Completion of Contract	Estimated Cost in million Tk for the year 2015-16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SD1	Owner's Engineer	Lot	1	ICB with short listing (QCBS)	EGCB Board	GOB	486.23	Planned Dates	5/16/2012	7/1/2012	8/12/2012	26/08/2012	16/09/2012	23/09/2012	30/09/2012	10/7/2012			264.5
								Planned Days	0	46	42	14	21	7	7	7	144		
								Actual Dates	16/05/2012	27/11/2012	1/7/2013	3/10/2013	8/12/2013	9/3/2013	10/30/2013	12/18/2013			
SD2	Business Process Analyst (BPA) for MIS	Lot	1	IC	EGCB Board	WB	4.23	Planned Dates		6/9/2013	19/06/2013	7/4/2013	-	18/7/2013	24/07/2013	31/07/2013			0
								Planned Days		0	10	15	-	14	6	7	52		
								Actual Dates		6/9/2013	29/07/2013	29/07/2013		8/7/2013	8/31/2013	11/24/2013			
SD3	IT System Manager	Lot	1	IC	EGCB Board	WB	6.55	Planned Dates		6/9/2013	19/06/2013	7/4/2013	-	18/7/2013	24/07/2013	31/07/2013			4
								Planned Days		0	10	15	-	14	6	7	52		
								Actual Dates		#####	1/2/2014	1/29/2014		4/7/2014	5/8/2014	7/16/2014			
SD4	Assistant IT System Manager	Lot	1	IC	EGCB Board	WB	2.72	Planned Dates		6/9/2013	19/06/2013	7/4/2013	-	7/18/2013	24/07/2013	31/07/2013			2
								Planned Days		0	10	15	-	14	6	7	52		
								Actual Dates		#####	1/2/2014	1/29/2014		4/7/2014	5/8/2014	7/16/2014			
SD5	ERP Expert	Lot	1	SSS	EGCB Board	WB	4.28	Planned Dates		27/08/2013	29/08/2013	9/1/2013	-	9/4/2013	9/5/2013	9/7/2013			1.5
								Planned Days		0	2	3	-	3	1	2	11		
								Actual Dates		10/3/2013	10/10/2013	10/17/2013	--	10/24/2013	31-10-2013	11/13/2013			

Collected data for specification verification of the machineries/goods (attachment-4)

সংযোজনী-৪

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কম্বাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের টার্নকী ঠিকাদার কর্তৃক সরবরাহকৃত/সরবরাহ তথ্য যন্ত্রপাতি/মালামালের স্পেসিফিকেশন ভেরিফিকেশন সংক্রান্ত তথ্যাদি সংগ্রহের ছক

ক্র: নং	প্রধান প্রধান যন্ত্রপাতি/মালামালের বিবরণ	চুক্তি মোতাবেক স্পেসিফিকেশন	সরবরাহকৃত যন্ত্রপাতি মালামালের প্রকৃত স্পেসিফিকেশন	স্পেসিফিকেশনের পার্থক্য যদি থাকে	পার্থক্য থাকলে তার কারন	উৎপাদনকারী ও দেশের নাম	উৎপাদনের বছর
১	২	৩	৪	৫	৬	৭	৮
1	Gas Turbine	Net Output: 217044 kW; Air In: 35°C ; Fuel: Natural Gas; Turbine Exhaust: 621°C; Turbine stage: 3	Base: 227081 kW; Net Output: 217044 kW; Air In: 35°C ; Fuel: Natural Gas; Turbine Exhaust: 621.5°C ; Turbine stage: 3	0.5°C temperature difference in Exhaust Temperature		GE, USA	2014
2	Steam Turbine	Net Output: 118356 kW; HP, IP, LP Turbine Stages not mentioned	Base: 127290 kW; Stage: 30 HP 11IP 5LP			GE, USA	
3	Condenser	Nos of Passes: 2; Design Cooling Water in: 38°C; Design Cooling Water out: 48.55°C; Design Flow Rate: 4980 kg/s; Condensate Temperature: 52.5°C	Nos of Passes: 2; Cooling Water in: 37.7°C; Cooling Water out: 47.26°C; Flow Rate: 5674.7 kg/s; Condensate Temperature: 51.24°C	0.3°C Temperature Difference in Cooling Water Temp. in; 1.29°C Temperature Difference in Cooling Water Temp. out; 694.7 kg/s difference in Cooling Water Flow		Foster Wheeler, Spain	

ক্র: নং	প্রধান প্রধান যন্ত্রপাতি/ মালামালের বিবরণ	চুক্তি মোতাবেক স্পেসিফিকেশন	সরবরাহকৃত যন্ত্রপাতি মালামালের প্রকৃত স্পেসিফিকেশন	স্পেসিফিকেশনের পার্থক্য যদি থাকে	পার্থক্য থাকলে তার কারণ	উৎপাদনকারী ও দেশের নাম	উৎপাদনের বছর
				Rate; 1.26°C Temperature Difference in Condensate Temperature.			
4	HRSG	Supplier- CMI, Belgium; Type- Horizontal Gas Path, natural circulation, 3 pressure loops; Boiler inlet temperature- 621 <sup>0</sup> C; Exhaust Outlet Temperature- 86 <sup>0</sup> C; Exhaust gas flow rate- 589.4 kg/s	Supplier- CMI, Belgium; Type- Horizontal Gas Path, natural circulation, 3 pressure loops; Boiler inlet temperature- 623.2 <sup>0</sup> C; Exhaust Outlet Temperature- 95.3 <sup>0</sup> C; Exhaust gas flow rate- 590.97 kg/s			Dechang, Korea	2013
5	Gas Turbine Generator	VOLTAGE- 11~22 KV, FREQUENCY- 50 HZ, 335 MVA	VOLTAGE- 15 KV, FREQUENCY- 50 HZ, 335 MVA			GE, USA	
6	Steam Turbine Generator	VOLTAGE- 15 KV, FREQUENCY- 50 HZ, 169 MVA	VOLTAGE- 14.5 KV, FREQUENCY- 50 HZ, 169 MVA			GE, USA	
7	GTG Main Transformer	175/232/293 MVA, YNd1, 15/230KV	183/244/305 MVA, YNd1, 15/230 KV			ABB, POLAND	
8	STG Main Transformer	102/135/170 MVA, YNd1, 15/230 KV	102/136/170 MVA, YNd1, 14.5/230KV			ABB, POLAND	

Collected data for monitoring quantities of machineries/goods (attachment-5)

সংযোজনী-৫

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কম্বাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের টার্নকী ঠিকাদার কর্তৃক সরবরাহকৃত/সরবরাহ তথ্য যন্ত্রপাতি/মালামালের পরিবীক্ষন সংক্রান্ত তথ্যাদি সংগ্রহের ছক।

ক্র:নং	প্রধান প্রধান যন্ত্রপাতি/মালামালের বিবরণ	চুক্তি মোতাবেক সরবরাহের পরিমাণ	প্রকৃত সরবরাহের পরিমাণ	স্থাপিত যন্ত্রপাতি/মালামালের পরিমাণ	সরবরাহকৃত যন্ত্রপাতি/মালামালের পরিমাণ
১	২	৩	৪	৫	৬
1	Gas Turbine	1	1	1	1
2	Steam Turbine	1	1	1	1
3	Condenser	1	1	1	1
4	HRSG	1	1	1	1
5	Gas Turbine Generator	1	1	1	1
6	Steam Turbine Generator	1	1	1	1
7	GTG Main Transformer	1	1	1	1
8	STG Main Transformer	1	1	1	1

Monitoring table with collected information for tendering process whether the procurements were done following PPA-2006 and PPR-2008 (attachment-6) (14 procurement contracts)

সংযোজনী-৬

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষণ ছক”

চুক্তির নাম: **Engaging a Service Provider for Operation and Maintenance Service of Siddhirganj 2x120 MW Peaking Power Plant, Siddhirganj, Narayangani, Bangladesh.**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়াবলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	দরপত্র দলিল পিপিএ এবং বিশ্বব্যাংকের ক্রয় গাইড লাইন অনুসারে প্রণীত	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	২৮/১০/২০০৭ এবং ২৯/১০/২০০৭	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	১। দৈনিক ইত্তেফাক ২। The Daily Star ৩। দৈনিক ভোরের কাগজ ৪। The New Age	
৪	দরপত্র গ্রহণের তারিখ	২১/০১/২০০৮	
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র খোলার সময় কমিটির সকল সদস্য উপস্থিত ছিলেন।	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	০৬ (ছয়) সদস্য দ্বারা দরপত্র মূল্যায়ন কমিটি গঠন করা হয়েছিল।	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	দরপত্র মূল্যায়ন কমিটিতে বাইরের ০২ (দুই) জন সদস্য ছিলেন।	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	দরপত্র বিষয়ে কোন অভিযোগ ছিল না।	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	পিপিআর অনুযায়ী যথাসময়ে দরপত্র মূল্যায়ন সম্পন্ন হয়েছে।	
১০	দরপত্র অনুমোদন করেছেন কে ?	DOFP অনুসারে ইজিসিবি লিঃ এর বোর্ড কর্তৃক দরপত্র অনুমোদন করা হয়েছে।	
১১	NOA প্রদান	৩১/১০/২০১১ ইং তারিখে NOA প্রদান করা হয়।	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	১৮/১২/২০১১ ইং তারিখে চুক্তি স্বাক্ষরিত হয়।	
১৩	এক কোটি টাকার অধিক মূল্যের দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না।	দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছিল।	
১৪	প্রাক্কলিত মূল্যমান	৬৯৯৬৬.০০ লক্ষ টাকা।	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	কাজ চলমান আছে।	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রযোজ্য নয়।	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রযোজ্য নয়।	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	চুক্তি অনুযায়ী Payment হচ্ছে।	

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষণ ছক”

চুক্তির নাম: **Owner's Engineer**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়াবলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	দরপত্র দলিল পিপিএ এবং বিশ্বব্যাপকের ক্রয় গাইড লাইন অনুসারে প্রণীত	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	১৫/০৫/২০১২ এবং ১৭/০৫/২০১২	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	১। দৈনিক ইত্তেফাক ২। Daily Star	
৪	দরপত্র গ্রহণের তারিখ	০৫/০৬/২০১২	
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র খোলার সময় কমিটির সকল সদস্য উপস্থিত ছিলেন।	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	০৬ (ছয়) সদস্য দ্বারা দরপত্র মূল্যায়ন কমিটি গঠন করা হয়েছিল।	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	দরপত্র মূল্যায়ন কমিটিতে বাইরের ০২ (দুই) জন সদস্য ছিলেন।	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	দরপত্র বিষয়ে কোন অভিযোগ ছিল না।	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	পিপিআর অনুযায়ী যথাসময়ে দরপত্র মূল্যায়ন সম্পন্ন হয়েছে।	
১০	দরপত্র অনুমোদন করেছেন কে ?	DOFP অনুসারে ইজিসিবি লিঃ এর বোর্ড কর্তৃক দরপত্র অনুমোদন করা হয়েছে।	
১১	NOA প্রদান	প্রয়োজ্য নয়	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	১৮/১২/২০১৩ ইং তারিখে চুক্তি স্বাক্ষরিত হয়।	
১৩	এক কোটি টাকার অধিক মূল্যের দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না।	দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছিল।	
১৪	প্রাক্কলিত মূল্যমান	৪৮৬২৩.০০ লক্ষ টাকা।	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	কাজ চলমান আছে	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রয়োজ্য নয়	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রয়োজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	চুক্তি অনুযায়ী Payment হচ্ছে।	



“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কম্বাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষন ছক”

চুক্তির নাম: **SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SIDDHIRGANJ 335 MW COMBINED CYCLE POWER PLANT (Machinery & Equipment with associated civil works (Turnkey))**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়াবলী	প্রকৃত	মন্তব্য
১	২	৩	৪	৫
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	দরপত্র দলিল পিপিএ এবং বিশ্বব্যাংকের ক্রয় গাইড লাইন অনুসারে প্রণীত		
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	১৪/১০/২০১০, ১৫/১০/২০১০, ১৬/১০/২০১০ এবং ১৮/১০/২০১০		
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	১। দৈনিক জনকণ্ঠ ২। দৈনিক ইত্তেফাক ৩। Daily Independent ৪। Daily Star		
৪	দরপত্র গ্রহণের তারিখ	১৫/১২/২০১০		
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র খোলার সময় কমিটির সকল সদস্য উপস্থিত ছিলেন।		
৬	দরপত্র মূল্যায়ন কমিটির গঠন	০৭ (সাত) সদস্য দ্বারা দরপত্র মূল্যায়ন কমিটি গঠন করা হয়েছিল।		
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	দরপত্র মূল্যায়ন কমিটিতে বাইরের ০২ (দুই) জন সদস্য ছিলেন।		
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	দরপত্র বিষয়ে কোন অভিযোগ ছিল না।		
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	পিপিআর অনুযায়ী যথাসময়ে দরপত্র মূল্যায়ন সম্পন্ন হয়েছে।		
১০	দরপত্র অনুমোদন করেছেন কে ?	DOFP অনুসারে ইজিসিবি লিঃ এর বোর্ড কর্তৃক দরপত্র অনুমোদন করা হয়েছে।		
১১	NOA প্রদান	১১/১০/২০১১ ইং তারিখে NOA প্রদান করা হয়।		
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	২৮/০৫/২০১২ ইং তারিখে চুক্তি স্বাক্ষরিত হয়েছে		
১৩	এক কোটি টাকার অধিক মূল্যের দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না।	দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছিল।		
১৪	প্রাক্কলিত মূল্যমান	মার্কিন ডলার ১৯৬,০৯৮,৭৭১.০০ ইউরো ৭৮,৯৫২,৯২২.০০ টাকা ২,৭৯৫,০৮১,৭০৭.০০		
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	কাজ চলমান আছে		
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রযোজ্য নয়		
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রযোজ্য নয়		
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	চুক্তি অনুযায়ী Payment হচ্ছে।		

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কন্সট্রাকশন সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষণ ছক”

**চুক্তির নাম: Purchase of Motor vehicle (Car)**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়বলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	দরপত্র দলিল পিপিএ ক্রয় গাইড লাইন অনুসারে প্রণীত	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	০৭/০৬/২০১৫	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	১। দৈনিক ইত্তেফাক ২। The Daily Star	
৪	দরপত্র গ্রহণের তারিখ	২৩/০৬/২০১৫	
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র খোলার সময় কমিটির সকল সদস্য উপস্থিত ছিলেন।	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	০৬ (ছয়) সদস্য দ্বারা দরপত্র মূল্যায়ন কমিটি গঠন করা হয়েছিল।	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	দরপত্র মূল্যায়ন কমিটিতে বাইরের ০২ (দুই) জন সদস্য ছিলেন।	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	দরপত্র বিষয়ে কোন অভিযোগ ছিল না।	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	পিপিআর অনুযায়ী যথাসময়ে দরপত্র মূল্যায়ন সম্পন্ন হয়েছে।	
১০	দরপত্র অনুমোদন করেছেন কে ?	DOFP অনুসারে ব্যবস্থাপনা পরিচালক মহোদয় কর্তৃক দরপত্র অনুমোদন করা হয়েছে।	
১১	NOA প্রদান	টেন্ডার Validity সময়ের মধ্যে NOA প্রদান করা হয়েছে (০৭/১০/২০১৫ তারিখে NOA প্রদান করা হয়)।	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	NOA জারীর ২১ (একুশ) দিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	
১৩	এক কোটি টাকার অধিক মূল্যের দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না।	দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়নি।	
১৪	প্রাক্কলিত মূল্যমান	২৮,৫০,০০০.০০ (টাকা আটশ লক্ষ পঞ্চাশ হাজার মাত্র)	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে।	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রযোজ্য নয়	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রযোজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	চুক্তি অনুযায়ী Payment হয়েছে।	

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষণ ছক”

**চুক্তির নাম: Purchase of Motor vehicle (Double Cabin Pickup)**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়াবলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	দরপত্র দলিল পিপিএ ক্রয় গাইড লাইন অনুসারে প্রণীত এবং ডিপিএম এ ক্রয় করা হয়েছে।	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	প্রযোজ্য নহে।	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	ডিপিএম এ ক্রয় করা হয়েছে।	
৪	দরপত্র গ্রহণের তারিখ	১০/০৫/২০১৫	
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র খোলার সময় কমিটির সকল সদস্য উপস্থিত ছিলেন।	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	০৬ (ছয়) সদস্য দ্বারা দরপত্র মূল্যায়ন কমিটি গঠন করা হয়েছিল।	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	দরপত্র মূল্যায়ন কমিটিতে বাইরের ০২ (দুই) জন সদস্য ছিলেন।	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	দরপত্র বিষয়ে কোন অভিযোগ ছিল না।	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	পিপিআর অনুযায়ী যথাসময়ে দরপত্র মূল্যায়ন সম্পন্ন হয়েছে।	
১০	দরপত্র অনুমোদন করেছেন কে ?	DOFP অনুসারে ব্যবস্থাপনা পরিচালক মহোদয় কর্তৃক দরপত্র অনুমোদন করা হয়েছে।	
১১	NOA প্রদান	টেভার Validity সময়ের মধ্যে NOA প্রদান করা হয়েছে।	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	NOA জারীর ২৩ (তেইশ) দিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	
১৩	এক কোটি টাকার অধিক মূল্যের দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না।	প্রযোজ্য নহে।	
১৪	প্রাক্কলিত মূল্যমান	৪৭,৮৪,৪৬৫.০০ (টাকা সাতচল্লিশ লক্ষ চুরাশি হাজার চারশত পয়ষাট মাত্র)	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে।	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রযোজ্য নয়	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রযোজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	চুক্তি অনুযায়ী Payment হয়েছে।	

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষণ ছক”

**চুক্তির নাম: Purchase of Motor vehicle (Car)**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়াবলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	দরপত্র দলিল পিপিএ ক্রয় গাইড লাইন অনুসারে প্রণীত	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	২০/০৩/২০১৩	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	১। দৈনিক ইত্তেফাক ২। The New Age	
৪	দরপত্র গ্রহণের তারিখ	০৪/০৪/২০১৩	
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র খোলার সময় কমিটির সকল সদস্য উপস্থিত ছিলেন।	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	০৬ (ছয়) সদস্য দ্বারা দরপত্র মূল্যায়ন কমিটি গঠন করা হয়েছিল।	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	দরপত্র মূল্যায়ন কমিটিতে বাইরের ০২ (দুই) জন সদস্য ছিলেন।	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	দরপত্র বিষয়ে কোন অভিযোগ ছিল না।	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	পিপিআর অনুযায়ী যথাসময়ে দরপত্র মূল্যায়ন সম্পন্ন হয়েছে।	
১০	দরপত্র অনুমোদন করেছেন কে ?	DOFP অনুসারে ব্যবস্থাপনা পরিচালক মহোদয় কর্তৃক দরপত্র অনুমোদন করা হয়েছে।	
১১	NOA প্রদান	টেভার Validity সময়ের মধ্যে NOA প্রদান করা হয়েছে।	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	NOA জারীর ১০ (দশ) দিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	
১৩	এক কোটি টাকার অধিক মূল্যের দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না।	দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়নি।	
১৪	প্রাক্কলিত মূল্যমান	২৭,৫০,০০০.০০ (টাকা সাতাশ লক্ষ পঞ্চাশ হাজার মাত্র)	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে।	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রযোজ্য নয়	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রযোজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	চুক্তি অনুযায়ী Payment হয়েছে।	

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষণ ছক”

**চুক্তির নাম: Purchase of Motor vehicle (Double Cabin Pickup)**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়াবলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	দরপত্র দলিল পিপিএ ক্রয় গাইড লাইন অনুসারে প্রণীত	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	২০/০৪/২০১০	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	১। দৈনিক ইত্তেফাক ২। The Daily Star	
৪	দরপত্র গ্রহণের তারিখ	১১/০৫/২০১০	
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র খোলার সময় কমিটির সকল সদস্য উপস্থিত ছিলেন।	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	০৬ (ছয়) সদস্য দ্বারা দরপত্র মূল্যায়ন কমিটি গঠন করা হয়েছিল।	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	দরপত্র মূল্যায়ন কমিটিতে বাইরের ০২ (দুই) জন সদস্য ছিলেন।	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	দরপত্র বিষয়ে কোন অভিযোগ ছিল না।	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	পিপিআর অনুযায়ী যথাসময়ে দরপত্র মূল্যায়ন সম্পন্ন হয়েছে।	
১০	দরপত্র অনুমোদন করেছেন কে ?	DOFP অনুসারে ব্যবস্থাপনা পরিচালক মহোদয় কর্তৃক দরপত্র অনুমোদন করা হয়েছে।	
১১	NOA প্রদান	টেন্ডার Validity সময়ের মধ্যে NOA প্রদান করা হয়েছে।	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	NOA জারীর ০৭ (সাত) দিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	
১৩	এক কোটি টাকার অধিক মূল্যের দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না।	দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়নি।	
১৪	প্রাক্কলিত মূল্যমান	২০,০০,০০০.০০ (টাকা বিশ লক্ষ মাত্র)	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে।	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রযোজ্য নয়	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রযোজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	চুক্তি অনুযায়ী Payment হয়েছে।	

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরিবীক্ষণ ছক”

**চুক্তির নাম: Purchase of Motor vehicle (Pajero Jeep )**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়াবলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	দরপত্র দলিল পিপিএ ক্রয় গাইড লাইন অনুসারে প্রণীত এবং ডিপিএম এ ক্রয় করা হয়েছে।	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	প্রযোজ্য নহে।	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	ডিপিএম এ ক্রয় করা হয়েছে।	
৪	দরপত্র গ্রহণের তারিখ	১১/০৬/২০১০	
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র খোলার সময় কমিটির সকল সদস্য উপস্থিত ছিলেন।	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	০৬ (ছয়) সদস্য দ্বারা দরপত্র মূল্যায়ন কমিটি গঠন করা হয়েছিল।	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	দরপত্র মূল্যায়ন কমিটিতে বাইরের ০২ (দুই) জন সদস্য ছিলেন।	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	দরপত্র বিষয়ে কোন অভিযোগ ছিল না।	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	পিপিআর অনুযায়ী যথাসময়ে দরপত্র মূল্যায়ন সম্পন্ন হয়েছে।	
১০	দরপত্র অনুমোদন করেছেন কে ?	DOFP অনুসারে ব্যবস্থাপনা পরিচালক মহোদয় কর্তৃক দরপত্র অনুমোদন করা হয়েছে।	
১১	NOA প্রদান	টেভার Validity সময়ের মধ্যে (২৭/০৬/২০১০ইং তারিখে) NOA প্রদান করা হয়েছে।	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	NOA জারীর ০৩ (তিন) দিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	
১৩	এক কোটি টাকার অধিক মূল্যের দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না।	প্রযোজ্য নহে।	
১৪	প্রাক্কলিত মূল্যমান	৪৫,৬৫,০০০.০০ (টাকা পয়তাল্লিশ লক্ষ পয়ষটি হাজার মাত্র)	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে।	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রযোজ্য নয়	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রযোজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	চুক্তি অনুযায়ী Payment হয়েছে।	

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষণ ছক”

**চুক্তির নামঃ Business Process Analyst for the implementation of ERP& EAM System in EGCB Ltd.**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়বলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	সাহায্য সংস্থা (বিশ্বব্যাংক) ক্রয় গাইডলাইন অনুসারে প্রণীত	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	প্রযোজ্য নয়	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	প্রযোজ্য নয়	
৪	দরপত্র গ্রহণের তারিখ	০২/০১/২০১৪ইং	
৫	দরপত্র দলিল খোলা সঠিকতা	দরপত্র মূল্যায়ন কমিটি কর্তৃক উন্মুক্ত হয়েছে	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	দরপত্র মূল্যায়ন কমিটি গঠন করা হয়েছে	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	হ্যাঁ (২জন)	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	না	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	হ্যাঁ	
১০	দরপত্র অনুমোদন করেছেন কে ?	ইজিসিবি বোর্ড	
১১	NOA প্রদান	প্রযোজ্য নয়	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	চুক্তি স্বাক্ষরিত হয়েছে ২৪/১১/২০১৪ইং	
১৩	এক কোটি টাকার অধিক মূল্যেও দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না	প্রযোজ্য নয়	
১৪	প্রাক্কলিত মূল্যমান	৪২,৩০,৯০০/- টাকা (বিয়াল্লিশ লক্ষ ত্রিশ হাজার নয় শত)	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	হ্যাঁ	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রযোজ্য নয়	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রযোজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	হয়েছে	

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষণ ছক”

চুক্তির নাম: IT System Manager for the implementation of ERP& EAM System in EGCB Ltd.

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়বলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	সাহায্য সংস্থার (বিশ্বব্যাংক) ক্রয় গাইডলাইন অনুসারে প্রণীত	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	১৮/১২/২০১৩ইং	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	দৈনিক ইত্তেফাক এবং The Daily Star	
৪	দরপত্র গ্রহণের তারিখ	০২/০১/২০১৪ইং	
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র উন্মুক্তকরণ কমিটি কর্তৃক উন্মুক্ত করা হয়েছে	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	দরপত্র মূল্যায়ন কমিটি গঠন করা হয়েছে	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	হ্যাঁ (২জন)	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	না	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	হ্যাঁ	
১০	দরপত্র অনুমোদন করেছেন কে ?	ইজিসিবি বোর্ড	
১১	NOA প্রদান	প্রয়োজ্য নয়	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	চুক্তি স্বাক্ষরিত হয়েছে ১৬/০৭/২০১৪ইং	
১৩	এক কোটি টাকার অধিক মূল্যেও দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না	প্রয়োজ্য নয়	
১৪	প্রাক্কলিত মূল্যমান	৬৫,৫২,০০০/- টাকা (পঁয়ষট্টি লক্ষ বাহান্ন হাজার)	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	প্রয়োজ্য নয়	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রয়োজ্য নয়	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রয়োজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	হয়েছে	



“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষণ ছক”

**চুক্তির নামঃ Assistant IT System Manager for the implementation of ERP& EAM System in EGCB Ltd.**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়াবলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	সাহায্য সংস্থার (বিশ্বব্যাংক) ক্রয় গাইডলাইন অনুসারে প্রণীত	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	১৮/১২/২০১৩ইং	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	দৈনিক ইত্তেফাক এবং The Daily Star	
৪	দরপত্র গ্রহণের তারিখ	০২/০১/২০১৪ইং	
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র উন্মুক্তকরণ কমিটি কর্তৃক উন্মুক্ত করা হয়েছে	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	দরপত্র মূল্যায়ন কমিটি গঠন করা হয়েছে	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	হ্যাঁ (২জন)	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	না	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	হ্যাঁ	
১০	দরপত্র অনুমোদন করেছেন কে ?	ইজিসিবি বোর্ড	
১১	NOA প্রদান	প্রযোজ্য নয়	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	চুক্তি স্বাক্ষরিত হয়েছে ৬/০৭/২০১৪ইং	
১৩	এক কোটি টাকার অধিক মূল্যেও দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না	প্রযোজ্য নয়	
১৪	প্রাক্কলিত মূল্যমান	২৭,২৪,০০০/- টাকা (সাতাশ লক্ষ চব্বিশ হাজার)	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	প্রযোজ্য নয়	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রযোজ্য নয়	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রযোজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	হয়েছে	

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষণ ছক”

চুক্তির নাম: **Supply, Installation, Integration, Testing and Commissioning of necessary equipment for the establishment of Core Network infrastructure (Package-1) for Corporate office, Siddhirgonj 2x120 MW PPP, Siddhirgonj 335 MW CCPP, Haripur 412MW CCPP and Data Center(DC) of EGCB Ltd.**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়াবলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	Standard Bidding Document of World Bank	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	২৯/০৪/২০১৪	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	দৈনিক ইত্তেফাক এবং The Daily Star	
৪	দরপত্র গ্রহণের তারিখ	২৭/০৫/২০১৪	
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র উন্মুক্তকরণ কমিটি কর্তৃক উন্মুক্ত করা হয়েছে	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	২১/০৫/২০১৪	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	হ্যাঁ	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	না	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	হ্যাঁ	
১০	দরপত্র অনুমোদন করেছেন কে ?	ব্যবস্থাপনা পরিচালক	
১১	NOA প্রদান	২৫/০৮/২০১৪	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	২৩/১০/২০১৪ (৫৮ দিন)	
১৩	এক কোটি টাকার অধিক মূল্যেও দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না	হ্যাঁ	
১৪	প্রাক্কলিত মূল্যমান	১,১৮,৪৬,০০০/- (এক কোটি আঠার লক্ষ ছিচল্লিশ হাজার)	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	হ্যাঁ	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রযোজ্য নয়	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রযোজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	হ্যাঁ	

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষণ ছক”

চুক্তির নাম: **Supply, Installation, Integration, Testing and Commissioning of necessary equipment for the establishment of Core Network infrastructure (Package-2) for Corporate office, Siddhirgonj 2x120 MW PPP, Siddhirgonj 335 MW CCPP, Haripur 412MW CCPP and Data Center(DC) of EGCB Ltd.**

ক্রমিক নং	বিবরণ	অনুসরণীয় বিষয়বলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	Standard Bidding Document of World Bank	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	২৯/০৪/২০১৪	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	দৈনিক ইত্তেফাক এবং The Daily Star	
৪	দরপত্র গ্রহণের তারিখ	২৭/০৫/২০১৪	
৫	দরপত্র দলিল খোলার সঠিকতা	দরপত্র উন্মুক্তকরণ কমিটি কর্তৃক উন্মুক্ত করতে হবে	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	২১/০৫/২০১৪	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	হ্যাঁ	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	না	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	হ্যাঁ	
১০	দরপত্র অনুমোদন করেছেন কে ?	ব্যবস্থাপনা পরিচালক	
১১	NOA প্রদান	২৫/০৮/২০১৪	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	২৩/১০/২০১৪ (৫৮ দিন)	
১৩	এক কোটি টাকার অধিক মূল্যেও দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না	হ্যাঁ	
১৪	প্রাক্কলিত মূল্যমান	২,২৮,৯৫,০০০/- (দুই কোটি আটশ লক্ষ পঁচানব্বই হাজার)	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	হ্যাঁ	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	প্রয়োজ্য নয়	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রয়োজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	হ্যাঁ	

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কয়লাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” শীর্ষক প্রকল্পের ক্রয় সংক্রান্ত বিষয়ে পিপিএ-২০০৬ এবং পিপিআর-২০০৮ এর নীতিতে হওয়ার বিষয়ে “দরপত্র পরীক্ষন ছক”

চুক্তির নাম: **ERP Expert for the implementation of ERP& EAM System in EGCB Ltd.**

ক্রমিকনং	বিবরণ	অনুসরণীয় বিষয়বলী ও তাঁর প্রতিপালন	মন্তব্য
১	২	৩	৪
১	দরপত্র দলিল পিপিএ ও সাহায্য সংস্থার ক্রয় গাইড লাইন অনুসারে প্রণীত কি না	সাহায্য সংস্থার (বিশ্বব্যাংক) ক্রয় গাইডলাইন অনুসারে প্রণীত	
২	পত্রিকায় দরপত্র প্রকাশের তারিখ	প্রযোজ্য নয়	
৩	কোন কোন পত্রিকায় দরপত্র প্রকাশিত হয়েছে (কমপক্ষে ২ টিতে)	প্রযোজ্য নয়	
৪	দরপত্র গ্রহণের তারিখ	প্রযোজ্য নয়	
৫	দরপত্র দলিল খোলার সঠিকতা	প্রযোজ্য নয়	
৬	দরপত্র মূল্যায়ন কমিটির গঠন	প্রযোজ্য নয়	
৭	দরপত্র মূল্যায়ন কমিটিতে বাইরের সদস্য ছিলেন কি না	প্রযোজ্য নয়	
৮	দরপত্র বিষয়ে কোন অভিযোগ ছিল কি না	প্রযোজ্য নয়	
৯	যথা সময়ে দরপত্র মূল্যায়ন শেষ করা হয়েছে কি না	প্রযোজ্য নয়	
১০	দরপত্র অনুমোদন করেছেন কে ?	ইজিসিবি বোর্ড	
১১	NOA প্রদান	প্রযোজ্য নয়	
১২	NOA জারীর কতদিনের মধ্যে চুক্তি স্বাক্ষরিত হয়েছে	প্রযোজ্য নয়	
১৩	এক কোটি টাকার অধিক মূল্যেও দরপত্র বিজ্ঞপ্তি সিপিটিইউ-তে পাঠানো হয়েছে কি না	প্রযোজ্য নয়	
১৪	প্রাক্কলিত মূল্যমান	৫২,৫৪০ মার্কিন ডলার	
১৫	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত হয়েছে কি না	হ্যাঁ	
১৬	চুক্তি অনুযায়ী যথাসময়ে ক্রয় সম্পাদিত না হলে তার কারণ কি	১ম বিড বাতিল হওয়ায় ২য় বিডের প্রসেসিং এর জন্য	
১৭	যথাসময়ে ক্রয় সম্পাদিত না হলে Liquidated damage আরোপ করা হয়েছিল কি না	প্রযোজ্য নয়	
১৮	চুক্তি অনুযায়ী Payment হয়েছে কি না ? না হলে কারণ কি?	হ্যাঁ	

## Collected data to measure efficiency of turbine generator (attachment-9)

### সংযোজনী-৯

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কন্সাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” প্রকল্পের আওতায় স্থাপিত টারবাইন  
জেনারেটরসমূহের এফিসিয়েন্সি পরিমাপের ছক:

প্রাইম ক্যাপাসিটি	৫০% লোডে প্রাকৃতিক গ্যাস কনজাম্পশন প্রতি ঘন্টা	১০০% লোডে প্রাকৃতিক গ্যাস কনজাম্পশন প্রতি ঘন্টা	সর্বোচ্চ আউটপুট পাওয়ার	মন্তব্য
335 MW	1.374 MM SCF	2.291 MM SCF	349.4 MW	

MM SCF      Million Standard Cubic Feet

Collected comparative data from similar public/private electricity generating enterprises (attachment-10)

সংযোজনী-১০

সরকারী ও বেসরকারী খাতে বিদ্যুৎ উৎপাদনকারী প্রতিষ্ঠানসমূহের কাজের তুলনামূলক ছক:

ক্রমিক নং	বর্ণনা/আইটেম	হরিপুর ৪১২ মেগাওয়াট কম্বাইন্ড সাইকেল পাওয়ার প্ল্যান্ট	বেসরকারী বিদ্যুৎ উৎপাদনকারী প্রতিষ্ঠান কর্তৃক নির্মিত পাওয়ার প্ল্যান্ট	মন্তব্য
১	অনুরূপ প্ল্যান্ট নির্মাণের মেয়াদ কাল	১৪ ফেব্রুয়ারী, ২০১১ হতে ০৬ এপ্রিল, ২০১৪		
২	অনুরূপ প্ল্যান্টের নির্মাণ ব্যয়	টাকা ৩৭০৩৭৯.১৫ লক্ষ		
৩	প্রতি ইউনিট বিদ্যুতের উৎপাদন ব্যয়	-		
৪	প্রতি ইউনিট বিদ্যুৎ তৈরিতে কি পরিমাণ প্রাকৃতিক গ্যাস দরকার হচ্ছে।	০.২২৫ ঘনমিটার/প্রতি ইউনিট		
৫	বর্জ্য নিক্ষেপনের জন্য প্রয়োজনীয় ব্যবস্থা	আছে		
৬	প্রাকৃতিক গ্যাস সরবরাহকারী সংস্থার নাম	তিতাস		
৭	প্রতি একক প্রাকৃতিক গ্যাসের ক্রয় মূল্য	টাকা ২.৮২ প্রতি ঘনমিটার		
৮	টারবাইন, জেনারেটর, ইঞ্জিন ও ট্রান্সফরমার উৎপাদনকারী দেশ।	GT- MHI Japan GTG – MELCO Japan ST + STG – FUJI Japan Transformer – ABB India		
৯	স্থাপিত জেনারেটর সমূহের এফিসিয়েন্সি	GT – 39% Overall – 57.5%		
১০	স্থাপিত জেনারেটর সমূহের হিট রেট	6240 kJ/kWh		

## Estimated investment as per RDPP

আরডিপিপি অনুযায়ী প্রকল্পের প্রাক্কলিত বিনিয়োগ ব্যয়

### Estimated Investment Cost of Siddhirganj 335 MW Combined Cycle Power Plant Project

Exchange rate 1US\$=TK 79.000 1 EURO= 98.00 (Average rate) (In Lakh Taka)

Sl.	Items		EGCB	GOB	P.A		Total
No.			Local	Local (FE)	Local	F.Ex	
<b>DIRECT COST</b>							
<b>A.</b>	<b>Turnkey part :</b>						
	<b>Package-1</b>						
A1.	Supply of equipment & materials						
1.	217 MW (net) Gas Turbo-Generator set with bypass Stake & damper complete in all respect including all auxiliaries and accessories.	0.00	0.00	0.00		53,696.30 (US\$ 67.970 m)	53,696.30
2.	Heat Recovery Steam Generator set (steam flow rate HP-72.04Kg/S, RH-83.96Kg/S & IP-13.56Kg/S) complete in all respect including 2x 100% capacity feed water pumps and auxiliaries.	0.00	0.00	0.00		24,631.29 (US\$ 31.179m)	24,631.29
3.	Steam Turbine generating set 1STG 118 MW (net) complete in all respect including surface water condenser, 2 x 100% capacity circulating water (C.W.) pumps and all other equipment and materials with cathodic protection.	0.00	0.00	0.00		30,979.06 (US\$ 39.214m)	30,979.06
	<b>Sub-Total of (1-3) of A1</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>109,306.65</b> (US\$138.363m)	<b>109,306.65</b> (US\$ 138.363m)
4	<b>Balance of Plant</b>						
	i) Cooling Towers (water flow rate 18000m <sup>3</sup> /S) completed in all respect including structural steel, fans and motors, piping, controls.	0.00	0.00	0.00		3,222.11 (US\$ 4.079 m)	3,222.11
	ii) Demineralized water system complete in all respect including all the auxiliaries, storage tanks, pumps, piping, control system etc.	0.00	0.00	0.00		1,805.94 (US\$ 2.286 m)	1,805.94
	iii) Water Pre-Treatment System complete in all respect including clarifiers, filters, settlement tanks, pumps, valves, chemical dosing system, piping and control syste, etc	0.00	0.00	0.00		12,109.87 (US\$ 15.329m)	12,109.87
	iv) Gas Booster Compressor (suction capacity 35300Sm <sup>3</sup> /h & 7Kg/S)	0.00	0.00	0.00		10,487.31 (US\$ 13.275 m)	10,487.31

Sl.	Items		EGCB	GOB	P.A		Total
No.			Local	Local (FE)	Local	F.Ex	

packages complete in all respect including motors, all auxiliaries, coolers, lubrication system, piping and control syste and all other auxiliary equipment.

v) Other Balance of Plant mechanical equipment and systems included but not limited to natural gas supply system (including 1.5 km gas pipeline, interfacing with RMS) air compressore, circulating water water system, raw water system, raw water and wastewater treatment systems condensate system, feed water system, service water system, auxiliary cooling water system, fire protection system, piping and valvs, water storage tanks, cooling water chemical injection equipment and other chemical system and equipment, etc	0.00	0.00	0.00	38,353.50 (US\$ 48.549 m)	38,353.50
<b>Sub Total of 4 (i-v) of A1</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>65,978.73</b> (US\$ 83.517 m)	<b>65,978.73</b> (US\$ 83.517 m)

5	Electrical Equipment:					
	i) GT step-up Tr. (201/268/335MVA, 15/230kV, 3-phase) including OLTC, relays and protections.	0.00	0.00	0.00	2,212.00 (US\$ 2.800 m)	2,212.00
	ii) ST step-up Tr. (102/135/170MVA, 15/230kV, 3-phase) including OLTC, relays and protections.	0.00	0.00	0.00	1,647.15 (US\$ 2.085 m)	1,647.15
	iii) generator Circuit Breakers includinf associated CTs, VTs, surge arresters, disconnectors, earthing switchs etc.	0.00	0.00	0.00	769.30 (US\$ 0.974 m)	769.30
	iv) Unit Aux. Tr., Station Aux. Tr., and Generator's Isolator-phase Bus	0.00	0.00	0.00	1,339.45 (US\$ 1.696m)	1,339.45
	v) Other electrical equipment and system including, but not limited to 230 KV, medium and other low voltage circuit breakers and switchgears, CT, PT, Lighting Arresters, Steel Structure, battery & battery chargers, raceways, grounding, relay protection, lighting and small power system, cables (including U/G for power evacuation) and other electrical system	0.00	0.00	0.00	8,490.83 (US\$ 10.748 m)	8,490.83
	vi) One Emergency Diesel Generator set (EDG) (1000 KVA) including all ancilliary.	0.00	0.00	0.00	323.90 (US\$ 0.410 m)	323.90



Sl.	Items		EGCB	GOB	P.A		Total
No.			Local	Local (FE)	Local	F.Ex	
	<b>Sub Total of 5 (i-vi) of A1</b>		0.00	0.00	0.00	14,782.63	14,782.63
				0.00		(US\$ 18.712m)	(US\$ 18.712m)
6	Control and Instrumentation Equipment						
	i) Control Metering and Protection Equipment/instrument, calibration equipment, test equipment including Pannels/ MMI computers	0.00	0.00	0.00		5,797.99	5,797.99
						(US\$ 7.339 m)	
	ii) Plant intregral control management system complete in all respect	0.00	0.00	0.00		1,023.74	1,023.74
						(US\$ 1.296m)	
	iii) communication system including PABX, Telephone, Paging, PLC, Telemetry etc.	0.00	0.00	0.00		470.80	470.80
						(US\$ 0.596m)	
	<b>Sub Total of 6 (i-iii) of A1</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>7,292.53</b>	<b>7,292.53</b>
				<b>0.00</b>		<b>(US\$ 9.231 m)</b>	<b>(US\$ 9.231 m)</b>
	<b>Total of A1 (1-6)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>197,360.54</b>	<b>197,360.54</b>
				<b>0.00</b>		<b>(US\$ 249.823m)</b>	<b>(US\$249.823 m)</b>
A2	Maintenance Equipment, including overhead cranes, lifting equipment, machines & electrical shop equipment and tools, hoists, maintenance equipment and tools, etc.	0.00	0.00	0.00		2,568.54	2,568.54
						(US\$ 3.2513 m)	
A3	Mandatory Spares and special tools.	0.00	0.00	0.00		2,478.41	2,478.41
						(US\$ 3.1372 m)	
A4	Design of power plant system and equipment for the power generating facility	0.00	0.00	0.00		14,666.00	14,666.00
						(US\$ 18.5646 m)	
A5	Foundation of all equipments, piling, leveling and Civil and Building works related to plant and equipment.	0.00	0.00	0.00		14,485.09	14,485.09
						(US\$ 18.3356 m)	
A6	Installation/ Erections, Testing and commissioning	0.00	0.00	0.00		24,219.10	24,219.10
						(US\$ 30.6571m)	
A7	Training for Personnel (65 MM Foreign Training + on Site Training) and FAT Attendance (Appendix-6)	0.00	0.00	0.00		2,672.22	2,672.22
						(US\$ 3.3823 m)	
A8	Guarantee Engineer's Service & Execution of 1st Inspection	0.00	0.00	0.00		1,494.18	1,494.18
						(US\$ 1.8914 m)	
A9	Duct Bank					324.23	324.23
						(US\$ 0.41 m)	
	<b>Sub Total of (A2+A3+A4+A5+A6+A7+A8+A9)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>62907.77</b>	<b>62,907.77</b>
				<b>0.00</b>		<b>(US\$ 79.63 m)</b>	<b>(US\$ 79.63 m)</b>
	<b>Total of</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>260268.31</b>	<b>260,268.31</b>

Sl.	Items		EGCB	GOB	P.A		Total
No.			Local	Local (FE)	Local	F.Ex	
	(A1+A2+A3+A4+A5+A6+A7+A8+A9 )			0.00		(US\$ 329.45m)	(US\$ 329.45m)
	Package-2, 3 & 4.						
A10	Owner's Engineer (Including Tax & Vat)		0.00		0.00	7,110.00	7,110.00
						(US\$ 9.00 m)	
A11	Initial base fees cost of O&M operator for Siddhirganj 335 CCPP including O&M service after performance test.		0.00	0.00	0.00	4,661.00	4,661.00
						(US\$ 5.9m)	
	Initial base fees cost of O&M operator for Siddhirganj 2X120MW peaking power plant including O&M service after performance test.		0.00	0.00	0.00	6,912.50	6,912.50
						(US\$ 8.75m)	
A12	Management Information System (Appendix-19)		0.00	0.00	0.00	9,045.50	9,045.50
						(US\$ 11.45m)	
A13	LTSA of GT for 6 Years			0.00	0.00	0.00	20,050.20
		20,050.20 (US\$25.38m)					
A14	Support to Implementing Agencies including Construction of Primary School & other facilities (Appendix-20)		0.00	0.00	0.00	2,765.00	2,765.00
						(US\$ 3.5m)	
	Sub Total of A10, A11, A12,A13,A14		20,050.20	0.00	0.00	30,494.00	50,544.20
				0.00	0.00	(US\$ 38.60 m)	(US\$ 63.98m)
	Sub Total of A (A1 to A14)		20,050.20	0.00	0.00	290,762.31	310,812.51
			0.00	0.00	0.00	(US\$ 368.05m)	(US\$ 393.434m)
B	EGCB/ GoB Part						
	1. Land development (Appendix-2)		0.00	0.00	0.00	0.00	0.00
	2. Cost of civil works (Non-residential) (Appendix-3)		0.00	707.24	0.00	0.00	707.24
	3. Cost of civil works (Residential) (Appendix-4)		0.00	2,135.40	0.00	0.00	2,135.40
	4. Cost of Motor-vehicles (Appendix- 5)		252.27	69.26	0.00	0.00	321.53
	5. Charge for Electrical Energy during construction		0.00	9.00	0.00	0.00	9.00
	6. Supply of Natural gas for initial operation		0.00	2,134.84	0.00	0.00	2,134.84
	7. Legal Fees (Dispute Board, Arbitration, etc.)		200.00	0.00	0.00	0.00	200.00
	8. Shifting of 2 ckts 33 KV U/G cable		0.00	0.00	0.00	0.00	0.00
	Sub Total of B (1-8)		452.27	5,055.74	-	-	5,508.01
	Total Direct Cost (A+B) (Except A10, A11, A12,A13,A14)		452.27	5,055.74	-	260,268.31	265,776.32

Sl.	Items		EGCB	GOB	P.A		Total
No.			Local	Local (FE)	Local	F.Ex	
				0.00		(US\$ 329.45m)	(US\$336.43m)
	<b>Total C&amp;F Cost/ Machine &amp; Equipment cost (A1+A2+A3)</b>		0.00	0.00	0.00	202,407.49	202,407.49
				0.00		(US\$256.21m)	(US\$256.21m)
C.	<b>Indirect Cost</b>						
1	Inland Transportation, Insurance and others	0.00	0.00	0.00	0.00		0.00
2	Customs Duty, Taxes and VAT	0.00	24,812.97	0.00	0.00		24,812.97
3	Advance Income Tax & VAT						
	a) For Turnkey contractor	0.00	23,424.15	0.00	0.00		23,424.15
	b) For Owner's Engineer	0.00	0.00	0.00	0.00		0.00
4	L.C Charge (Bank charge)	0.00	7,576.50	0.00	0.00		7,576.50
5	a) Salary and Allowances for Project Implementation period. (Appendix- 7, 9)	1,442.90	0.00	0.00	0.000		1,442.90
	b) Material, Supply and service (Appendix- 7)	124.62	8.38	0.00	0.00		133.00
	c) Repairs, Maintenance. (Appendix- 7)	74.19	5.81	0.00	0.00		80.00
6	Interest during construction @ 3% p.a. on GOB Component and @ 4% p.a. on F.Ex component considering 60% equity on GOB.	21,360.14	1.14	0.00	0.00		21,361.28
7	Physical Contingency	2.26	25.28	0.00		3,436.50 (US\$ 4.35m)	3,464.04
8	Price Contingency (5.59% of EPC Contract)	0.00	0.00	0.00		15,800.00	15,800.00
				0.00		(US\$ 20.00m)	(US\$ 20.00 m)
	<b>Total Indirect Cost</b>	23,004.11	55,854.23	0.00		19,236.50 (US\$ 24.35m)	98,094.83 (US\$124.171m)
				0.00			
	<b>Grand Total</b>	43,506.58	60,909.97	0.00		309,998.81 (US\$392.40m)	414,415.35 (US\$ 524.576m)
				0.00			



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Govt. of the Peoples Republic of Bangladesh  
Ministry of Power, Energy and Mineral Resources  
Power Division  
[www.powerdivision.gov.bd](http://www.powerdivision.gov.bd)

Sub: Minutes of the meeting held on 02-09-2010 in the conference room of Ministry of Power, Energy and Mineral Resources with World Bank and EGCB regarding 2 x 150 MW Power Project.

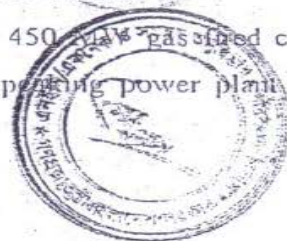
A meeting was held in the conference room (Room No-121, Building No-6, Bangladesh Secretariat) of Ministry of Power, Energy and Mineral Resources on 02-09-2010 at 9:30 hrs with World Bank and EGCB regarding 2 x 150 MW Power Project. The meeting was presided over by Secretary, Power Division. List of attendance is enclosed herewith. On 29-08-2010 another meeting was held in this regard.

02. At the very beginning of the meeting, the Chairman welcomed all the officials present in the meeting. He mentioned that the meeting is arranged to solve the problems and expedite the progress of Siddirgonj 2 x 150 MW Peaking Power Plant Project. He pointed out that earlier EGCB sent the Bid Evaluation Report of Siddirgonj 2 x 150 MW Peaking Power Plant on 29-04-2010 to World Bank (WB) for concurrence. In reply, WB informed Honorable Adviser on Power, Energy and Mineral Resources (to the Honorable Prime Minister) on August 16, 2010 that WB was unable to concur the Bid Evaluation Report recommendations sent by EGCB. In their reply, WB endorsed an accelerated 'flash bidding' in order to award a contract within an estimated 90 days. Under this accelerated process, the eight original bidders would be invited to re-bid, and would be permitted to establish new joint ventures if they wish. In this regard, acting MD, EGCB stated the merits and demerits of 'flash bidding' concept and opined for fresh bidding. WB officials also participated in the discussion. After detail discussion, everybody present in the meeting agreed for fresh bidding with 450 MW CCPP instead of 300 MW Peaking Power Plant. They also agreed for a 5 (five) months timeline for issuing NOA of this Project. Country Director, WB expressed her keen interest in timely completion and quality bidding process of 450 MW CCPP.

03. After detail discussions, the following decisions were taken:

- a) A fresh tender will be invited by EGCB for 450 MW gas fired combined cycle power plant in place of 300 MW gas fired peaking power plant following WB guidelines;

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- b) WB will arrange additional funding for 450 CCPP;
- c) Power Cell will engage one Consultant for feasibility study and another for Tender Document Preparation in consultation with WB on urgent basis. In that case, Power Cell may follow the single source selection process. It was also decided that already engaged Technical Advisor for Bibyana and other IPT's Mr. Denis King Would assist in bid document preparation, feasibility study and bid evaluation;
- d) A timeline of 5 (five) months upto issue of NQA was agreed in the meeting for 450 MW CCPP. EGCB & WB will follow the time schedule strictly. Power Division will monitor the timeline;
- e) DPP preparation/revision will be done by EGCB parallel to the feasibility study and tender document preparation;
- f) Any disagreement or dispute arises between WB and EGCB or the timeline is not maintained, both side will sit together and resolve the issues quickly;
- g) For the next 2/3 weeks, co-ordination meetings will be held on every Wednesday at 9:00 hrs in the conference room of Ministry of Power, Energy & Mineral Resources to monitor the progress of the project.

04. Having no other issue to be discussed in the meeting Secretary, Power Division and the Chairman thanked all for active participation and concluded the meeting.

sd/-

06-09-2010

(Md. Abul Kalam Azad)

Secretary

Power Division.

[seccypower@gmail.com](mailto:seccypower@gmail.com)



সিদ্ধিরগঞ্জ ২x১৫০ মে: ও: বিকিং পাওয়ার প্লান্ট প্রকল্পের ফরমজ ২০১৫-১৬ বিধি আনোচনা সভায় অন্য  
০২-০৯-২০১০ তারিখ উপস্থিত কর্মকর্তাদের স্বাক্ষর:-

[illegible]





## Annexure-2

- General questionnaire for the people involved in project implementation for the collection of data and comments from them regarding problems and implementation of the project (attachement-7)
- Questionnaire for the Project Director for collection of data and comments on project implementation and problems (attachment-8)
- Questionnaire for collecting comments from the local people regarding the economic importance and probable contribution of the project (attachment-13)
- Questionnaire for Focussed Group Discussion



General questionnaire for the people involved in project implementation for the collection of data and comments from them regarding problems and implementation of the project (attachement-7)

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কন্সাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” - শীর্ষক প্রকল্পের বাস্তবায়ন ও সমস্যাাদি সম্পর্কিত তথ্যাদি ও মতামত সংগ্রহের জন্য সাধারণ প্রশ্নমালা

উত্তরদাতার নামঃ

(প্রকল্পে অপেক্ষাকৃত দীর্ঘকাল কর্মরত বাস্তবায়ন সংশ্লিষ্ট ও গুরুত্বপূর্ণ কাজের দায়িত্বে নিয়োজিত কর্মী)

পদবীঃ

ঠিকানাঃ

মোবাইল নম্বরঃ

- ১। ৩৩৫ মেগাওয়াট কন্সাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ কাজের সাথে কি আপনি সংশ্লিষ্ট আছেন? সংশ্লিষ্ট থাকলে কতদিন যাবৎ কিভাবে সংশ্লিষ্ট আছেন? সংশ্লিষ্ট না থাকলে কত দিন যাবৎ এ প্রকল্পের বাস্তবায়ন কাজ প্রত্যক্ষ করছেন?
- ২। প্রকল্পটি বাস্তবায়ন কোন সমস্যা বা প্রতিবন্ধকতার বিষয়ে কি আপনার জানা আছে। জানা থাকলে এ বিষয়ে অনুগ্রহপূর্বক কিছু বলুন লিখুন।
- ৩। প্রকল্প বাস্তবায়ন বিলম্ব ঘটছে এবং সমাপ্তির লক্ষ্যমাত্রা পিছিয়ে যাচ্ছে। এই বিলম্বের কারন সম্বন্ধে জানা থাকলে অনুগ্রহপূর্বক কিছু বলুন/লিখুন।
- ৪। কন্সাইন্ড সাইকেল পাওয়ার প্ল্যান্ট কনসেপ্ট ভবিষ্যত পাওয়ার প্ল্যান্ট নির্মাণে কাজে অব্যাহত রাখা আপনি যুক্তিসঙ্গত মনে করেন? যুক্তি সংগত না হলে অনুগ্রহপূর্বক তার কারণ সম্পর্কে বলুন।
- ৫। অনুগ্রহপূর্বক কন্সাইন্ড সাইকেল পাওয়ার প্ল্যান্ট-এর উপকারিতা ও অপকারিতা সম্পর্কে বলুন?
- ৬। জ্বালানী থেকে নির্গত কালো ধোয়া ও কার্বনডাইঅক্সাইড (CO<sub>2</sub>) এবং প্ল্যান্টের নিষ্কাশিত বর্জ্য পরিবেশের ক্ষতি করবে। এ ক্ষতি কমানো বা সর্বনিম্ন লেভেলে রাখার জন্য অনুগ্রহপূর্বক আপনার সূচিন্তিত মতামত দিন।
- ৭। এই ধরনের জেনারেটিং প্ল্যান্ট নির্মাণ কাজ দেশীয় প্রকৌশলী ও টেকনিশিয়ান দ্বারা সম্পাদন কি সম্ভব মনে করেন?
- ৮। এই ধরনের প্রকল্প ভবিষ্যতে দেশীয় লোকবল ও অর্থায়নে সম্পাদনের ব্যাপারে অনুগ্রহপূর্বক আপনার মতামত দিন।
- ৯। নতুন যে কোন জেনারেটিং ইউনিট স্থাপনের জন্য সরকারী ও বেসরকারী খাত থেকে যোগ্য প্রকৌশলী ও টেকনিশিয়ানের সমন্বয়ে জেনারেটিং টাইপভিত্তিক কয়েকটি দক্ষ কারিগরি দল (Core Technical Teams) গঠন করার প্রস্তাব কি আপনি সমর্থন করেন? এ ব্যাপারে আপনার গঠনমূলক প্রস্তাব/চিন্তা ভাবনা থাকলে অনুগ্রহপূর্বক তা লিখুন/বলুন।
- ১০। কন্সাইন্ড সাইকেল পাওয়ার প্ল্যান্ট সমূহের প্রতি ইউনিট বিদ্যুৎ উৎপাদন খরচ কিরূপ হয়ে থাকে? অনুগ্রহপূর্বক আপনার মন্তব্য দিন।

তথ্য সংগ্রহকারীর নাম :

ঠিকানাঃ

Questionnaire for the Project Director for collection of data and comments on project implementation and problems (attachment-8)

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কম্বাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)”- শীর্ষক প্রকল্পের বাস্তবায়ন ও সমস্যাাদি সম্পর্কিত তথ্যাদি ও মতামত সংগ্রহের নিমিত্ত প্রকল্প পরিচালকের জন্য প্রশ্নমালা

**প্রকল্প পরিচালকের নামঃ**

**পদবীঃ**

**মোবাইল নম্বরঃ**

- ১। আপনি কত দিন যাবত এই প্রকল্পের দায়িত্বে আছেন ?
- ২। আপনার পূর্বে কেউ কি প্রকল্প পরিচালকের দায়িত্ব পালন করেছেন? করে থাকলে অনুগ্রহপূর্বক তাঁর/তাদের নাম ও সময়কাল উল্লেখ করুন ।
- ৩। ডিপিপি অনুযায়ী কোন কোন কর্মকর্তা ও কর্মচারী আপনার প্রকল্পে প্রেষণে পদায়ন করা হয়েছে এবং প্রেষণে পদায়নের জন্য কোন কোন পদ খালি আছে? খালি থাকলে, খালি পদগুলো প্রেষণে পদায়নের জন্য কি ব্যবস্থা গৃহীত হয়েছে?
- ৪। ডিপিপি অনুযায়ী কোন কোন কর্মকর্তা ও কর্মচারী নতুন নিয়োগ করা হয়েছে? নিয়োগের জন্য কোন কোন পদ খালি থাকলে তা নিয়োগের জন্য কি ব্যবস্থা গৃহীত হয়েছে?
- ৫। বর্তমানে আপনার অধীনে যে কয়জন কর্মকর্তা ও কর্মচারী নিয়োজিত আছেন, তাদের দ্বারা আপনি কি সুষ্ঠুভাবে প্রকল্পের বাস্তবায়ন কাজ সম্পাদন করতে পারছেন? লোকবল ঘাটতি থাকলে তার কারনে কি ধরনের সমস্যার সম্মুখীন হচ্ছেন?
- ৬। মালামাল (Goods), কাজ (Works) ও সেবা (Services) -এর সংগ্রহ/ক্রয় (Procurement)-এর যে কয়টি প্যাকেজ করা হয়েছে, সেগুলোর মধ্যে কোন কোন প্যাকেজের টেন্ডারিং প্রক্রিয়া সমাপ্ত হয়েছে এবং কোন কোন প্যাকেজের টেন্ডারিং প্রক্রিয়া এখনও বাকী আছে?
- ৭। যে সকল প্যাকেজের টেন্ডারিং প্রক্রিয়া সমাপ্ত হয়েছে, সেগুলো যথাযথ সরকারী বিধিমালা অনুসরণ করা হয়েছে কিনা এবং এই প্রক্রিয়ায় কোন সমস্যা সম্মুখীন হয়েছিলেন কি?
- ৮। যে সকল প্যাকেজের টেন্ডারিং প্রক্রিয়া সমাপ্ত হয় নাই, সেগুলোর বর্তমান অবস্থা কি? এ সব প্যাকেজের প্রক্রিয়াকরণে কোন সমস্যা থাকলে অনুগ্রহপূর্বক তার বর্ণনা দিন ।
- ৯। মালামাল (Goods) সংগ্রহ/ক্রয়ের প্যাকেজগুলোর চুক্তিপত্র সম্পাদিত হয়েছে এবং ওয়ার্ক অর্ডার দেয়া হয়েছে সেগুলোর অধীনে মালামাল সংগ্রহের বর্তমান অবস্থা কি পর্যায়ে আছে?
- ১০। কাজ (Works)-এর যে প্যাকেজগুলোর চুক্তিপত্র স্বাক্ষরিত হয়েছে ও ওয়ার্ক অর্ডার প্রদান করা হয়েছে, সেগুলোর কাজ শুরু হয়ে থাকলে তার অগ্রগতি কিরূপ? আর কাজ শুরু না হয়ে থাকলে তার কারণ কি?
- ১১। সেবা (Services)-এর যে প্যাকেজগুলোর চুক্তিপত্র স্বাক্ষরিত হয়েছে ও ওয়ার্ক অর্ডার দেয়া হয়েছে, সেগুলোর অধীনে দেশী ও বিদেশী পরামর্শক প্রতিষ্ঠান কি কাজ শুরু করেছেন? এ ব্যাপারে কি কোন সমস্যা আছে?
- ১২। প্রকল্প বাস্তবায়নে কি কি ধরনের সমস্যার সম্মুখীন হচ্ছেন এবং এগুলোর উত্তরনের জন্য আপনার কি কোন পরামর্শ বা সুপারিশ আছে?

- ১৩। প্রকল্প বাস্তবায়নের বর্তমান পর্যায়ে দাঁড়িয়ে আপনি কি আশাবাদী যে অনুমোদিত আরডিপিপি-এর লক্ষ্যমাত্রা অনুযায়ী প্রকল্পটি জুন, ২০১৭-তে সমাপ্ত হবে?
- ১৪। প্রকল্পটি সুষ্ঠুভাবে ও সময়মত বাস্তবায়ন এবং প্রকল্পের উদ্দেশ্যাবলী পুরোপুরি অর্জনের লক্ষ্যে আপনার কোন সূচিন্তিত মতামত থাকলে অনুগ্রহপূর্বক তা বলুন।
- ১৫। পাওয়ার প্ল্যান্টসমূহের কাজ টার্নকি বেসিস দেশী/বিদেশী ঠিকাদারী প্রতিষ্ঠান দ্বারা সম্পাদন করানো হচ্ছে। এই কাজগুলি সংশ্লিষ্ট সরকারী প্রতিষ্ঠান মাধ্যমে করানো হলে কি কি সমস্যা হতে পারতো বলে মনে করেন।
- ১৬। কম্বাইন্ড সাইকেল পাওয়ার প্ল্যান্ট কনসেপ্ট ভবিষ্যত পাওয়ার প্ল্যান্ট নির্মাণে কাজে অব্যাহত রাখা আপনি যুক্তিসংগত মনে করেন? যুক্তি সংগত না হলে অনুগ্রহপূর্বক তার কারণ সম্পর্কে বলুন।
- ১৭। নতুন যে কোন জেনারেটিং ইউনিট স্থাপনের জন্য সরকারী ও বেসরকারী খাত থেকে যোগ্য প্রকৌশলী ও টেকনিশিয়ানের সমন্বয়ে জেনারেটিং টাইপভিত্তিক কয়েকটি দক্ষ কারিগরি দল (Core Technical Teams) গঠন করার প্রস্তাব কি আপনি সমর্থন করেন? এ ব্যাপারে আপনার গঠনমূলক প্রস্তাব/চিন্তা ভাবনা থাকলে অনুগ্রহপূর্বক তা লিখুন/বলুন।

তথ্য সংগ্রহকারীর নাম :

ঠিকানাঃ

Questionnaire for collecting comments from the local people regarding the economic importance and probable contribution of the project (attachment-13)

ছক : ১৩  
গণপ্রজাতন্ত্রী বাংলাদেশ সরকার  
পরিকল্পনা মন্ত্রণালয়  
বাস্তবায়ন পরিবীক্ষণ ও মূল্যায়ন বিভাগ

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কন্সাইন্ড সাইকেল পাওয়ার প্ল্যান্ট (সংশোধিত)” শীর্ষক বাস্তবায়নাধীন প্রকল্পের বাস্তবায়ন ও সমস্যা  
সম্পর্কিত তথ্যাদি ও প্রকল্পের অর্থনৈতিক গুরুত্ব ও সম্ভাব্য অবদান সম্পর্কে মতামত সংগ্রহের নিমিত্তে প্রকল্প এলাকার স্থানীয়  
ব্যক্তিবর্গের জন্য প্রশ্নমালা

নামঃ

পেশাঃ

ঠিকানাঃ-

মোবাইল নম্বর :

গ্রামঃ

উপজেলাঃ

জেলাঃ

প্রশ্নমালা

১	বিদ্যুৎ কেন্দ্র নির্মাণের ফলে আপনি কি কোনভাবে ক্ষতিগ্রস্ত হয়েছেন? (ক) হ্যাঁ (খ) না (টিক চিহ্ন দিন)
২	যদি হ্যাঁ হয় তাহলে, কিভাবে?
৩	এই বিদ্যুৎ কেন্দ্র বাস্তবায়নে কোনরূপ সমস্যা লক্ষ্য করেছেন কি? (ক) হ্যাঁ (খ) না (টিক চিহ্ন দিন) (বিবরণসহ)
৪	এই প্রকল্প বাস্তবায়নকালে স্থানীয়ভাবে এলাকার জন্য কোনরূপ সমস্যা লক্ষ্য করেছেন কি? (ক) হ্যাঁ (খ) না (টিক চিহ্ন দিন) (বিবরণসহ)
৫	এই প্রকল্প বাস্তবায়নের ফলে আপনার এলাকায় কোনরূপ স্থায়ী সমস্যা রয়ে যাবে মনে করেন? বিবরণ দিন।
৬	এই প্রকল্প বাস্তবায়নের ফলে আপনার এলাকার পরিবেশে কোনরূপ ক্ষতির আশংকা আছে কি? (ক) হ্যাঁ (খ) না (টিক চিহ্ন দিন)
৭	কোনরূপ ক্ষতির আশংকা থাকলে কি কি রূপে? (টিক চিহ্ন দিন) (ক) বায়ু দূষণ (খ) শব্দ দূষণ (গ) পানি দূষণ (ঘ) অন্যান্য (উল্লেখ করুন)
৮	এই প্রকল্প আপনার এলাকার অর্থনৈতিক উন্নয়নে অবদান রাখবে বলে মনে করেন? (ক) হ্যাঁ (খ) না
৯	এই প্রকল্প বাস্তবায়নে আপনার ব্যক্তিগত পেশা বা দৈনন্দিন জীবন নির্বাহে অবদান রাখবে কি? (ক) হ্যাঁ (খ) না
১০	এই বিদ্যুৎ কেন্দ্র নির্মাণের ফলে দেশের বিদ্যুৎ ব্যবস্থার উন্নতি হবে বলে মনে করেন? (ক) হ্যাঁ (খ) না
১১	এই প্রকল্পের কারণে অত্র এলাকায় কোনরূপ কর্মসংস্থান হয়েছে কি? (ক) হ্যাঁ (খ) না (বিবরণসহ)
১২	আপনার এলাকায় এ ধরনের আরও প্রকল্প স্থাপন যুক্তিযুক্ত মনে করেন? (ক) হ্যাঁ (খ) না
১৩	এই প্রকল্পটি বাস্তবায়িত হলে অত্র এলাকায় নিম্নের কোন কোন ক্ষেত্রে গুরুত্বপূর্ণ অবদান রাখবে বলে মনে করেন? (ক) বিদ্যুতের সহজ প্রাপ্তি (খ) কর্মসংস্থান (গ) শিক্ষাক্ষেত্রে (ঘ) স্বাস্থ্যব্যবস্থায় (উ) পরিবহণ ব্যবস্থায় (চ) ব্যবসাবাগিজে (ছ) পরিবেশে (জ) কারখানা স্থাপনে (ঝ) সরবরাহ ব্যবস্থায় (ঞ) সার্বিক জীবনমান উন্নয়নে

## Questionnaire for Focussed Group Discussion

“সিদ্ধিরগঞ্জ ৩৩৫ মেগাওয়াট কম্বাইন্ড সাইকেল পাওয়ার প্ল্যান্ট নির্মাণ (সংশোধিত)” - শীর্ষক প্রকল্পের  
নিবিড় পরিবীক্ষণ কাজের ফোকাস গ্রুপ আলোচনা অনুষ্ঠানের জন্য প্রশ্নাবলীঃ

স্থানঃ

নামঃ

পদবীঃ

প্রতিষ্ঠানঃ

মোবাইল নংঃ

আলোচ্য বিষয়ের উপর মতামতঃ

১। প্রকল্পটির বাস্তবায়নে নিম্নলিখিত ক্ষেত্রে অবদান রাখবে কিনাঃ

ক) প্রকল্পটি বাস্তবায়নের মাধ্যমে দেশের প্রাকৃতিক গ্যাস সম্পদের উত্তম ব্যবহার করা হচ্ছে। ☐ হ্যাঁ ☐ না

খ) বিদ্যুতের ঘাটতি পূরণ এবং লোড সেডিং ন্যূনতম পর্যায়ে নিয়ে আসার ক্ষেত্রে অবদান। ☐ হ্যাঁ ☐ না

গ) জাতীয় গ্রীড ব্যবস্থার স্থিতিশীলতা ও নির্ভরযোগ্যতা বৃদ্ধি এবং স্থানীয় উৎপাদনের মাধ্যমে ট্রান্সমিশন লস কমিয়ে আনতে সাহায্য করবে। ☐ হ্যাঁ ☐ না

২। বিবিধ

উত্তরদাতার স্বাক্ষরঃ

তারিখঃ





# Annexure-3

Factory Acceptance Test Witness (5 Nos.)



# **ELECTRICITY GENERATION COMPANY OF BANGLADESH LIMITED**

**(An Enterprise of Bangladesh Power Development Board)**

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Factory Acceptance Test Witness for  
Generator Circuit Breakers (Gt and ST)

For

**SIDDHIRGANJ 335 MW COMBINED CYCLE POWER PLANT PROJECT**

Test Held at  
**ABB Switzerland Ltd, Zurich, Switzerland**



**Preamble :**

The EPC contract to implement the construction of SIDDHIRGANJ 335 MW COMBINED CYCLE POWER PLANT PROJECT was signed between Electricity Generation Company of Bangladesh Limited and JV of Isolux Ingenieria S.A. and Samsung C&T Corporation on 28/05/2012.

As per contract at the end of Manufacturing process and before dispatching from the factory, the test of the Generator Circuit Breakers (GCB) are supposed to be witnessed at the factory by the EGCB engineers and contractor of the project. Accordingly the following three engineers of EGCB Ltd had been nominated to witness the factory test of the GCBs at ABB Switzerland Ltd, Zurich Switzerland factory as per memo no. C-1321-EGCB(CO)/HR-40/2013 dated: 27/08/2013.

1. Mohammad Abul Hasnat. Superintendent Engineer (P&D), EGCB Ltd
2. Ibrahim Ahmed Shafi Al Mohtad. Executive Engineer (P&D), EGCB Ltd.
3. Md. Siful Islam, Executive Engineer (electrical Maintenance), Siddhirganj 2x120 MW PPP.

The Following three representatives from Isolux Corsan were also present on the test

1. Enrique Gómez Ayuso: Project Engineer.
2. José Ignacio Barreiro Salvador: Electrical Engineer.
3. Retro Ghirardello, quality inspector from SGS, engaged by Isolux Corsan

**Visit to ABB Switzerland Ltd at Zurich Switzerland**

The approved vendor of the GBC is **ABB Switzerland Ltd**. So above engineers of EGCB Ltd left for the factory as per schedule given by the contractor of the project. Accordingly the tour ternary of the officials was as follows:-

- Sept 11th: Journey Dhaka-Zurich.  
Sept 12th: FAT tests.  
Sept 13th: FAT tests backup day.  
Sept 14th: Flight back to Dhaka from Zurich.

Shafi

During the stay in Zurich, the EGCB engineers visited the manufacturing workshop facility of ABB Switzerland, inspected the GCBs with a view to physically see the test procedure and recording data during the test procedure.

## **TEST PROCEDURE**

Generally there are some specified test that are performed on the GCB- System during production and factory acceptance test. For testing a GCB- system two different standards was applied. The generator circuit breaker itself was tested according to the IEEE standard C37.013, all other components (earthing switch, etc.) according to IEC standard 62271. During the factory acceptance test an abridgement of the routine test was performed.

### **Standards Overview Production Test (IEEE C37.013) / Routine Test (IEC62271)**

The routine tests are for the purpose of revealing faults in material and construction. They do not impair the properties and reliability of the test object. Routine tests were performed during production by the manufacturer on each apparatus, wherever reasonably practicable. They ensure that the product is in accordance with the equipment on which the type tests have been passed.

#### **Factory acceptance test**

Prior to the acceptance test, each unit of the GCB- system and its components has already passed the production test and provide a test protocol for each breaker. According the test protocol some of the tests was repeated to compare and prove the measured values during production test. A copy of the test report as per protocol was handed over to the attendee of factory acceptance test. It confirms the successful acceptance of production test.

The default test program listed below covers all major tests on the GCB- system.

1. Power frequency withstands voltage tests on major insulation components.
2. Mechanical, timing and leakage tests on the circuit breaker.
3. Electrical resistance of current path across circuit breaker.
4. Tests of the circuit breaker drive.
5. Mechanical tests on the disconnect, earthing and starting switches.
6. Tests of the control signals, alarms and interlocking.
7. Leakage test of the system enclosure at 15mbar/4 in pressure drop.

*Signature*

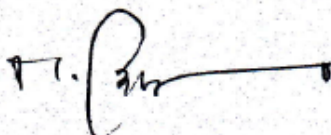


**Comments:**

The tests were performed according to the test procedure. The calibration dates of the major equipment used in the tests were found up to date. The results of the tests were found within the safe limit with respect to the technical specification as per manufacturer.

**Enclosure:**

1. Minutes of the meeting among EGCB, Isolux and ABB engineers during the test procedure.
2. Test report for GCB for Gas Turbine.
3. Test report for GCB for Steam turbine.
4. Test protocol for GCB given by Isolux Corsan.
5. Calibration certificates of major equipment used in the test.
6. Copy of nomination letter.



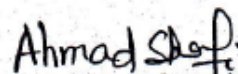
24.09.2013

Md. Siful Islam,

Executive Engineer (electrical Maintenance),

Siddhirganj 2x120

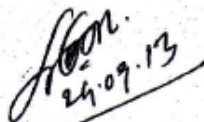
MW PPP.



24.09.2013

Ibrahim Ahmed Shafi Al Mohtad.

Executive Engineer (P&D), EGCB Ltd.



Mohammad Abul Hasnat.

Superintendent Engineer (P&D), EGCB Ltd





# **ELECTRICITY GENERATION COMPANY OF BANGLADESH LIMITED**

(An Enterprise of Bangladesh Power Development Board)

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**REPORT**

**ON**

**FACTORY ACCEPTANCE TEST WITNESS OF  
STEAM TURBINE STEP UP TRANSFORMER**

**FOR**

**SIDDHIRGANJ 335 MW COMBINED CYCLE POWER PLANT PROJECT**

**[Contract No. F 34-EGCB/2012 Dated: 28/05/2012]**

**TEST HELD AT**

**ABB Sp. Z o.o.  
ul. Aleksandrowska 67/93,  
91-205 Lodz, Poland**

## **PREAMBLE:**

The EPC contract between EGCB Ltd. and Isolux Ingenieria S.A. and Samsung C&T Corporation for Siddhirganj 335 MW Combined Cycle Power Plant Project was signed on 28 May 2012.

As per design, the 335 MW CCPP has a Steam Turbine Step-up Transformer of 170 MVA capacity. At the end of the manufacturing process and before dispatching from the factory, the acceptance tests of the transformer are supposed to be witnessed at factory by EGCB engineers as per the contract. Accordingly, the following three officers from EGCB had been nominated to witness the factory test of the Steam Turbine Step Up Transformer at ABB Sp. Z o.o. in Lodz, Poland as per the Government Order No: 27.087.025.00.001(Part-01).2013.288 dated: 26/11/2013 issued by the Power Division of MPEMR:

1. Alim Uddin Ahmed, Joint Secretary, Executive Director (Finance), EGCB Ltd., Dhaka.
2. Md. Fazlur Rahman, Superintendent Engineer, New Haripur 360MW CCPP, EGCB Ltd., Dhaka.
3. Nandhipan Das, Sub Divisional Engineer, Siddhirganj 2x120 MW PPP, EGCB Ltd., Dhaka.

## **Visit to ABB Sp. Z o.o. in Poland:**

The approved vendor for supplying the Steam Turbine Step Up Transformer is ABB.

The general itinerary of the officials was as follows:

December 19: Dhaka-UAE-Poland

December 20: Factory Visit

December 23: Flight back to Dhaka from Warsaw

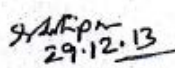
During visit to ABB Sp. Z o.o, Lodz, Poland, the team of engineers from EGCB visited the manufacturing facilities and inspected the transformer physically with a view to see the connection procedure and recording facilities of the testing lab. We have found that the step up transformer has conventional silica gel breather without the 'Drycol' system.

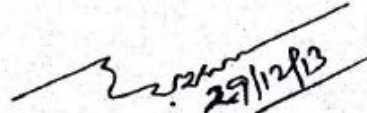
**Comments:**

The tests were performed according to test procedure from 04/12/2013 to 11/12/2013. The results of the test were found satisfactory and within the safe limit with respect to technical specification as per manufacturer. Due to delay at visa processing system, we were unable to present during FAT. Mr. Ronald Tipton of K&M Engineering and Consulting, Mr. Jose Ignacio Barreiro Salvador and Mr. Alberto Gomez Pulgaro of Isolux were present at the FAT.

**Enclosure:**

1. Copy of Government Order.
2. Test Report for Step-up Transformer for Steam Turbine.
3. FAT Report for Step-up Transformer provided by consultant Mr. Ronald Tipton, PhD.

  
29.12.13  
**Nandhipan Das**  
Sub Divisional Engineer  
Siddhirganj 2x120 MW PPP,  
EGCB Ltd.

  
29/12/13  
**Md. Fazlur Rahman**  
Superintendent Engineer  
New Haripur 360 MW  
CCPP, EGCB Ltd.

  
29/12/13  
**Alim Uddin Ahmed**  
Joint Secretary,  
Executive Director (Finance)  
EGCB Ltd.





# **ELECTRICITY GENERATION COMPANY OF BANGLADESH LIMITED**

(An Enterprise of Bangladesh Power Development Board)

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REPORT

ON

FACTORY ACCEPTANCE TEST WITNESS OF  
DISTRIBUTED CONTROL SYSTEM (DCS)

FOR

CONSTRUCTION OF SIDDHIRGANJ 335MW COMBINED  
CYCLE POWER PLANT.

TEST HELD AT

GE POWER AND WATER ENERGY CONTROLS TECHNOLOGY,  
SALEM, VA, USA

September-2013

**PREAMBLE:**

The EPC contract to implement the construction of Siddhirganj 335 MW Combined Cycle Power Plant was signed between Electricity Generation Company of Bangladesh (EGCB) Ltd. and ISOLUX CORSAN, Spain on 28<sup>th</sup> May 2012.

As per contract 335 MW Combined Cycle Power Plant Project is having a DCS to integrate and manage all the individual system-control and monitoring. However, at end of the manufacturing process and before dispatching from the factory, the tests on DCS are supposed to be witnessed at factory by the EGCB engineers of the project as per contract. Accordingly the following three engineers from EGCB had been nominated to witness the factory test of DCS at GE Power And Water Energy Controls Technology, Salem, VA, USA as per office memo no C-1320-EGCB(CO)/HR-40/2013 dated 27.08.2013.

1. Mr. A. K. M. Manzur Kadir, Manager (IMC & DCS), Siddhirganj 2X120 MW Peaking Power Plant, EGCB Ltd, Siddhirganj, Narayanganj.
2. Mr. A. K. M. Mostafizur Rahman, Manager (Procurement), Corporate office, EGCB Ltd., Dhaka.
3. Mr. A.K.M. Zillur Rahman, Assistant Manager (Technical), Haripur 360 MW Combined Cycle Power Plant, EGCB Ltd, Haripur, Narayanganj.

**GE POWER AND WATER ENERGY CONTROLS TECHNOLOGY, VA, USA**

The approved vendor of the project, GE Energy has its factory in Virginia of USA. So, the above engineers of EGCB left for the factory as per schedule given by the contractor of the project. Accordingly the tour itinerary of the officials is as follows:-

Sl. No.	Date	Place of Stay/Journey
01.	15/09/2013~15/09/2013	Dhaka <del>Abu Dhabi</del> Washington-Roanoke
02.	16/09/2013~19/09/2013	Stay & witness the tests in Salem, Virginia, USA (Factory Location)
03.	20/09/2013~22/09/2013	Roanoke-Washington- Dubai-Dhaka

/Abu Dhabi

During stay in GE factory in Salem, USA, EGCB engineers visited the workshop/facilities of Power And Water Energy Controls Technology before beginning the test and inspected the Panels and HMIs with a view to physically see the connection procedure and recording facilities of the tests.

### **TECHNICAL DESCRIPTION OF MARK-VIe DCS:**

Attached (Enclosure-3).

### **TESTS WITNESSED:**

The following tests on the simple cycle part of the said DCS were witnessed by EGCB engineers as per attached schedule (Enclosure-4).

1. Hardware fabrication inspection.
2. Input/output point test.
3. Graphic Display Test.
4. Standard DCS-function test.
5. Control function test of digital logic and analog control loop by simulation.
6. Alarm Priority testing.
7. Failure mode test.
  - System recovery from power outage.
  - Power Supply redundancy.
  - Controller Redundancy
  - UDH/PDH Faults and Highway redundancy.
  - Historian Data Server.
8. System diagnostics test.



### COMMENTS:

The tests were carried out on the simple cycle items of DCS supplied by GE Power And Water Energy Controls Technology, Salem, V, USA. The calibration dates of the major equipment used in the tests were up-to-date. The results were found satisfactory except some minor lapses which have been mentioned in the minutes of meeting among EGCB Ltd., IDOM and GE Power And Water Energy Controls Technology (Enclosure-4).

### ENCLOSURE:

1. Copy of nomination letter.
2. Minutes of meeting among EGCB Ltd., IDOM and GE Power And Water Energy Controls Technology.
3. Technical Description of Mark-VIe DCS.
4. Inspection and Test Procedure.
5. Pictorial view of Hardware Fabrication Inspection for Electrical and Mechanical cabinets.
6. Test of Hardware I/O.
7. Sample Test of Control Logic Diagrams.
8. Sample Test of Graphics.



**(Mr. A.K.M. Zillur Rahman)**

Assistant Manager (Technical)

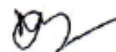
pur 360 MW Combined Cycle Power Plant  
EGCB Ltd , Haripur, Narayanganj.



**(Mr. A. K. M. Manzur Kadir)**

Manager (IMC & DCS)

Siddhirganj 2X120 MW Peaking Power Plant  
EGCB Ltd., Siddhirganj, Narayanganj



**(Mr. A. K. M. Mostafizur Rahman)**

Manager (Procurement)

Corporate office, EGCB Ltd., Dhaka.



# **ELECTRICITY GENERATION COMPANY OF BANGLADESH LIMITED**

(An Enterprise of Bangladesh Power Development Board)

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**REPORT**  
**ON**  
**FACTORY ACCEPTANCE TEST WITNESS OF**  
**GAS TURBINE GENERATOR**  
**FOR**  
**SIDDHIRGANJ 335 MW COMBINED CYCLE POWER PLANT PROJECT**  
**[Contract No. F 34-EGCB/2012 Dated: 28/05/2012]**

**TEST HELD AT**  
**GENERAL ELECTRIC**  
**SCHENECTADY, NEW YORK, USA**

## **PREAMBLE:**

The EPC contract between EGCB Ltd. and Isolux Ingenieria S.A. and Samsung C&T Corporation for Siddhirganj 335 MW Combined Cycle Power Plant Project was signed on 28 May 2012.

As per design, the 335 MW CCPP has a Gas Turbine Generator of 332 MVA capacity. At the end of the manufacturing process and before dispatching from the factory, the acceptance tests of the generator are supposed to be witnessed at factory by EGCB engineers as per the contract. Accordingly, the following three engineers from EGCB had been nominated to witness the factory test of the Gas Turbine Generator at General Electric Co. in Schenectady, New York, USA as per the Government Order No: 27.087.025.00.00.001.2013.128 dated: 27/05/2013 issued by the Power Division of MPEMR:

1. Mr. Md. Mostafa Kamal, Managing Director, EGCB Ltd., Dhaka.
2. Mr. Md. Siddiquir Rahman, Project Director, Siddhirganj 335 MW CCPP Project, EGCB Ltd., Dhaka.
3. Mr. Mohsinul Haque, Assistant Manager (Technical), Siddhirganj 335 MW CCPP Project, EGCB Ltd., Dhaka.

The following representative from Isolux ingenieria S.A. and Samsung C&T Corporation was also present during the test:

1. Mr. Angel Luis de Pedro Sanz, Deputy Project Manager, Siddhirganj 335 MW CCPP Project, Isolux ingenieria S.A. and Samsung C&T Corporation

## **VISIT TO GENERAL ELECTRIC IN USA:**

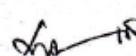

The approved vendor for supplying the Gas Turbine Generator is General Electric Co., USA. Out of the three (3) aforementioned engineers from EGCB, Mr. Mostafa Kamal and Mr. Siddiquir Rahman were attending the Design Review Meeting-2 of the project in Madrid. Both the engineers reached New York from Madrid on 15/06/2013. The other team member reached New York from Bangladesh for the test on 16/06/2013.

The general itinerary of the officials was as follows:

June 16: Dhaka-UAE-USA (Albany)

June 17: FAT Tests

June 20: Flight back to Dhaka from New York



During visit to General Electric Co., Schenectady, New York, USA, before the beginning of the test, the team of engineers from EGCB visited the manufacturing facilities and inspected the generator with a view to physically see the connection procedure and recording facilities of the testing kits/equipment.

#### **TESTS WITNESSED:**

The following tests were witnessed as part of the Hi-Pot field test for the Gas Turbine Generator:

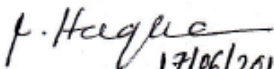
- 1) Insulation Resistance Measurement (Pre Hi-Pot) REV C 2013
- 2) Winding Resistance Measurement REV B 2012
- 3) High-Potential Test (Hi-Pot) REV B 2012
- 4) Insulation Resistance Measurement (Post Hi-Pot) REV B 2012


#### **Comments:**

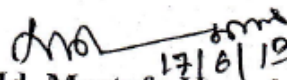
The tests were performed according to test procedure. The results of the test were found satisfactory and within the safe limit with respect to technical specification as per manufacturer.

#### **Enclosure:**

1. Copy of Government Order.
2. Test Report for GTG for Gas Turbine.
3. Test Protocol for GTG provided by EPC Contractor.

  
17/06/2013  
**Mohsinul Haque Shakif**  
Assistant Engineer  
Siddhirganj 335 MW  
CCPP Project  
EGCB Ltd.

  
**Md. Siddiqur Rahman**  
Project Director  
Siddhirganj 335 MW  
CCPP Project  
EGCB Ltd.

  
17/6/13  
**Md. Mostafa Kamal**  
Managing Director  
EGCB Ltd.







# **ELECTRICITY GENERATION COMPANY OF BANGLADESH LIMITED**

(An Enterprise of Bangladesh Power Development Board)

## **FACTORY TEST REPORT**

**ON**

**GAS BOOSTER COMPRESSOR (UNIT-I, No. 18284)**

**OF**

**SIDDHIRGANJ 335MW CCPP PROJECT**

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BTMC Bhaban (8<sup>th</sup> Floor), 7-9, Kawran Bazar C/A, Dhaka-1215, Bangladesh.

Tel: 880-2-9116382, 8124197, 9134 029, 9134032 Fax: 880-2-9118345

Web: [www.egcb.com.bd](http://www.egcb.com.bd)

### **Preamble:**

The EPC Contract to implement the Construction of Siddhirganj 335 MW Combined Cycle Power Plant was signed on May 28, 2012 between Electricity Generation Company of Bangladesh (An Enterprise of Bangladesh Power Development Board) and JV of ISOLUX Ingeneria S.A. & SAMSUNG C&T Corporation.

The Fuel Gas Compressor, one of the main Component of Siddhirganj 335 Combined Cycle Power Plant Project, is to be Supplied/ manufactured by CAMERON, USA. As per the Contractual requirement ISOLUX, the EPC Contractor, invited EGCB to witness several tests for the Fuel Gas Compressor factory at Buffalo, NY, USA. Accordingly, a three member's team of EGCB and a representative of consultant of the Project visited CAMERON Works in USA from 25/09/2013 to 30/09/2013 for witness the mentioned test. The team also attended in a 'High Level Meeting' during the visit.

### **Visit to CAMERON, USA:**

As per to Government order no. 27.041.025.00.00.040.2007.1324 dated 22/09/2013 issued by the Power Division of MEPMR, the following officials were nominated to visit USA to participate in the 'High Level Meeting' & witness factory acceptance test (Mechanical & Aerodynamic Test) for the Fuel Gas Compressor factory at Buffalo, USA under the Contract:

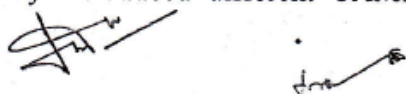
1. Mr. Foiz Ahamed, Chairman, EGCB Ltd. & Addl. Secretary, Power Division.
2. Mr. Md. Mostofa Kamal, Managing Director, EGCB Ltd.
3. Mr. N. S. Md. Imran Zakir, Dy. Manager (Technical), Siddhirganj 335 MW CCPP Project, EGCB Ltd.

The Consultant's representative Mr. Martin Tormey and representatives of Turnkey Contractor Mr. Alberto Gomez Pulgarin and Mr. Alberto Piñedo Betrian also witnessed the test.

The itinerary of the officials is as follows:

Sl. No.	Date	Place of Tours
01.	24/09/2013	Dhaka-Doha-Chicago-Bufferlo
02.	25/09/2013	High Level Meeting with Consultant & Manufacturer, visited the factory manufacturing & testing facilities
02.	26/09/2013 to 30/09/2013	Witnessed the Mechanical & Aerodynamic tests
03.	01/09/2013 to 02/09/2013	Bufferlo-Chicago-Doha-Dhaka

The team reached in Buffalo, NY, USA on 24/09/2013 night. In the next morning on 25/09/2013, the team visited the CAMERON Compressor Factory at Buffalo, NY, USA. The Project Engineer Ms. Priyanka Mahajan welcomed the team. She along with the Quality Assurance Manager of the factory introduced different CAMERON manufacturing & testing facilities at Buffalo through





explaining the quality assurance processes and showing the visitors the Milling & Turning of Compressor Components. The team was also shown all the three Impellers along with the Casings of the Compressors of this project to be supplied to Siddhirganj, Bangladesh. The team observed the Compressors and asked for some technical information regarding composition of the material used in the impeller. Then a 'High Level Meeting' was conducted between EGCB, Contractor, Consultant & Manufacturer regarding design, manufacturing process, shipment schedule & overall project schedule

The following Tests of Unit No. 1 (No. CB-18284) were witnessed and related Test reports are attached here with as Annexure-1.

**a) Mechanical Test**

The Compressor was tested according to API 617 procedures as described in Cameron Compression specification-IL-0937. The Mechanical test is run to record the vibration data of the pinions. During the test, the Compressor vibration data is acquired for steady state at full speed, at 115% of full speed and during a coast down of full speed. The compressor is run for 4 hours to ensure that the oil temperature and gear box temperature is fully stabilized.

**b) Aerodynamic Test of 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> & 4<sup>th</sup> Stage of the Unit**

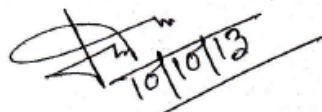
The Compressor was tested according to Cameron Compression Standard Test Procedure IL-0974, namely single stage closed loop testing of each compressor test using a test gas, in this case nitrogen gas. One stage is aerodynamically tested at a time. The other stage runs with open inlets and discharges during the duration of the test. The individual performance results from the stage are compiled to create an overall performance curve of the Compressor.

*The test met all mechanical performance data as per API-617 Standard. The vibration level of all stages was within acceptable API limits. Aerodynamically, the compressor tested within the guaranteed contractual requirements.*

Finally, the team left for Dhaka on 01/10/2011 and reached at Dhaka in morning time on 03/10/2013.

**Enclosures:**

1. Copy of the Government Order.
2. Annexure-1: Test Report of Mechanical & Aerodynamic Test.

  
10/10/13

N. S. Md. Imran Zakir  
DM(Technical)/Sub-Divisional Engineer  
Siddhirganj 335 MW CCPP Project  
EGCB Ltd.

  
10/10/13

Md. Mostofa Kamal  
Managing Director  
EGCB Ltd.





# Annexure-4

RCDR (5 Nos.)



ISOLUX CORSAN

SAMSUNG C&amp;T

## PACKING LIST

## Seller:

JV OF ISOLUX INGENIERIA S.A. AND  
SAMSUNG C AND T CORPORATION  
EDIFICIO ISOLUX CORSAN  
C/ Caballero Andante 8  
28021 Madrid - Spain



## Consignee 1:

SONALI BANK LTD.  
LOCAL OFFICE

35-44 MOTUHEEL COMMERCIAL AREA  
DHAKA-1000, BANGLADESH  
Tel. +88029550426-34  
Fax +88029568002  
E-mail: sbdote@bdc.com.bd

## Date of Packing List:

9th January 2014

## Invoice No.:

SIDDHIRGANJ2014PMED002

## Place and country of loading:

Porto Marghera, Italy

## Place and country of discharge:

Mongla Port, Bangladesh

## Consignee 2:

ELECTRICITY GENERATION COMPANY OF BANGLADESH (EGCB) LTD.  
BTMC BHABAN (LEVEL-8), 7-9, KAWRAN BAZAR  
DHAKA, BANGLADESH

## Notify:

CONTRACT NO. F 34-EGCB /2012 DATED : 28/05/2012  
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SIDDHIRGANJ  
335 MW COMBINED CYCLE POWER PLANT (CCPP)  
LIC NO.033012010558 DT. 03.09.12

SIDDHIRGANJ 335 MW CCPP Project EGCB Ltd.  
BTMC BHABAN (LEVEL-8), 7-9  
DHAKA1215, BANGLADESH  
Cell. +8801714116476 E-mail: pd2x180@egcb.com.bd

## SIDDHIRGANJ 335 MW COMBINED CYCLE POWER PLANT - BANGLADESH

PACKAGE N°	TYPE OF PACKAGE	CONTENT			WEIGHT KG.			SIZE IN METERS			CBM
		QUANTITY	UNIT	DESCRIPTION	IDENTIFICATION OF PART	NET WEIGHT	GROSS WEIGHT	Length	Width	Height	
1	Wooden Case	-	-	Compressor skid Item 18284	-	39000	44900	11.52	4.69	4.37	236.11
3	Wooden Case	-	-	Compressor skid Item 18286	-	39000	44900	11.52	4.69	4.37	236.11
5	Wooden Case	-	-	Compressor skid Item 18286	-	39000	44900	11.52	4.69	4.37	236.11
						117,000.00	134,700.00				708.32

ORIGINAL

RCDR NO. 02- E002

Receipt cum Damage Report		Date	16/05/14
Post Landing Inspection Statement at site			
Materials of this P/L reached Siddhirganj site with no apparent damage and are kept under the custody of EPC contractor			
Owner's engineer (consultant)	Engineer (EGCB side)	Project Director	
Signature		Signature	
Comments:			



Receipt cum Damage Report	Date	09/06/14
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Materials of this P/L reached Siddhiganga site with no apparent damage and are kept

engineer (Consultant)	engineer (EGCB side)	Project Director
--------------------------	-------------------------	------------------

### Certifications:

**Date of Packing List:**

**Invoice No.:**

Place and country of loading:

Place and country of discharge:

17th October 2013

2013/PMDW/DO10

Charleston (SC), USA

**Mongla, Bangladesh**

**Consignee 2:**

**ELECTRICITY GENERATION COMPANY OF BANGLADESH (EGCB) LTD**  
**BTMC BHABAN (LEVEL-8), 7-9, KAWRAN BAZAR**

DHAKA, BANGLADESH

**Notify:**

SIDDHIRHARAJ 335 MW CCPP Project EGCB Ltd  
BTMO BHADRAJ, Bhubaneswar, Odisha

BIMC BHABAN (LEVEL-8), 7-8  
DHAKA 1215, BANGLADESH

Cell. +8801714116476 E-mail: [pd2x150@engcb.com.bd](mailto:pd2x150@engcb.com.bd)

CONTRACT NO. F 34-EGCB/2012 DATED : 28/06/2012  
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SIDDHIRGAN,  
335 MW COMBINED CYCLE POWER PLANT (CCPP)  
L/C NO.033012070006 DT. 03.09.12

**SIDDHIRGANJ 335 MW COMBINED CYCLE POWER PLANT - BANGLADESH**

PACKAGE №	TYPE OF PACKAGE	CONTENT					WEIGHT KG.		SIZE IN METERS			CBM
		QUANTITY	UNIT	DESCRIPTION	IDENTIFICATION OF PART	NET WEIGHT	GROSS WEIGHT	Length	Width	Height		
1TURB1	SINGLE ITEM	1	UNIT	GAS TURBINE	9001	279776	279776	10,95	4,96	4,98	289,53	





ORIGINAL





PCDR NO. OF-DOLE

**Consignee 1:**  
SONALI BANK LTD.  
LOCAL OFFICE  
35-44 MOTUHEEL COMMERCIAL AREA  
DHAKA-1000, BANGLADESH  
Tel,+88029550426-34  
Fax,+88029568002  
E-mail: [shibtole@btdcom.net](mailto:shibtole@btdcom.net)

Receipt cum Damage Report		Date	04/06/19
Post Landing Inspection Statement at site			
Materials of this P/L reached Siddhiganga site with no apparent damage and are kept under the custody of EPC contractor			
Damwar's signature	Engineer (EGCB Side)	Project Director	
			
Comments:			
			

25-Nov-13  
2013/PMDW/DD016  
ALBANY (NY), USA  
Mongla, Bangladesh

CONTRACT NO. F 34-EGCB/2012 DATED : 28/05/2012  
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SIDDHIRGANJ,  
336 MW COMBINED CYCLE POWER PLANT (CCPP)  
LIC NO.03301207006 DT. 03.09.12

**Consnee 2:**  
ELECTRICITY GENERATION COMPANY OF BANGLADESH (EGCB) LTD.  
BTMC BHABAN (LEVEL-8), 7-9, KAWRAN BAZAR  
DHAKA, BANGLADESH  
**Notity:**  
SIDDHIRHANU 335 MM CPP Project EGCB Ltd.,  
BTMC BHABAN (LEVEL-8), 7-9  
DHAKA1215, BANGLADESH  
Cell., +8801714115476 E-mail: [md2xt50@egcb.com.bd](mailto:md2xt50@egcb.com.bd)

ISOLUX CORSAN



SAMSUNG C&T

**PACKING LIST**



RDR No. 60-DO97

**Seller:**

JV OF ISOLUX INGENIERIA S.A. AND  
SAMSUNG C AND T CORPORATION  
EDIFICIO ISOLUX CORSAN  
C/ Caballero Andante 8  
28021 Madrid - Spain

**Consignee 1:**

SONALI BANK LTD.  
LOCAL OFFICE  
35-44 MOTUHEEL COMMERCIAL AREA  
DHAKA-1000, BANGLADESH  
Tel: +88029550426-34  
Fax: +880295568002  
E-mail: sbiofe@bdc.com.net

**Date of Packing List:**

25-07-14

**Invoice No.:**

2014PMDWD097

**Place and country of loading:**

Barcelona, Spain

**Place and country of discharge:**

Chittagong, Bangladesh

**Consignee 2:**

ELECTRICITY GENERATION COMPANY OF BANGLADESH (EGCB) LTD.  
BTMC BHABAN (LEVEL-8), 7-9, KAWRAN BAZAR  
DHAKA, BANGLADESH

**Notice:**

SIDDHIRGANJ 335 MW CCPP Project EGCB Ltd.  
BTMC BHABAN (LEVEL-8), 7-9  
DHAKA-1215, BANGLADESH  
Cell: +8801714116476 E-mail: pd2x150@egcb.com.bd

**SIDDHIRGANJ 335 MW COMBINED CYCLE POWER PLANT - BANGLADESH**

PACKAGE N°	TYPE OF PACKAGE	CONTENT			WEIGHT KG.			SIZE IN METERS			CBM
		QUANTITY	UNIT	DESCRIPTION	HS CODE	NET WEIGHT	GROSS WEIGHT	Length	Width	Height	
1 of 1	Iron drum	370	mts	CABLE (3F00082) 133/230kv 1x800	85446010	9.770.00	11.910.00	3.07	2.08	3.07	19.60
1 of 2	Iron drum	370	mts	CABLE (3F00081) 133/230kv 1x800	85446010	9.770.00	11.910.00	3.07	2.08	3.07	19.60
1 of 3	Iron drum	370	mts	CABLE (3F00083) 133/230kv 1x800	85446010	9.770.00	11.910.00	3.07	2.08	3.07	19.60
1 of 4	Iron drum	292	mts	CABLE (4G00004) 133/230kv 1x1600	85446010	10.744.00	12.844.00	3.2	2.08	3.2	21.30
1 of 5	Iron drum	292	mts	CABLE (4G00005) 133/230kv 1x1600	85446010	10.744.00	12.844.00	3.2	2.08	3.2	21.30
1 of 6	Iron drum	292	mts	CABLE (4G00003) 133/230kv 1x1600	85446010	10.744.00	12.844.00	3.2	2.08	3.2	21.30
6						61.542.00	74.262.00				122.70

ORIGINAL





RED R. 67-10035

35-44 MOTIJSHEEL COMMERCIAL AREA  
DHAKA-1000, BANGLADESH  
Tel: 4980305/4980436/4

E-mail: [sblofe@bdc.com.net](mailto:sblofe@bdc.com.net)

BTMC BHABAN (LEVEL-8), 7-9, KAWRAN BAZAR  
DHAKA, BANGLADESH

SIDDHIRHARAJ 335 MW CCPP Project EGCB Ltd  
BTMC BHABAN (LEVEL 8) 70

DHAKA 1215, BANGLADESH  
Cell. +8801714116476

Cell. +8801714116476

E-mail: [pd2x150@egcb.com.bd](mailto:pd2x150@egcb.com.bd)

21/05/2014  
2014PME035  
Miami Port  
Chittagong Port, Bangladesh

Receipt cum Damage Report	Date	08/12/14
Post Landing Inspection Statement at site		
Materials of this P/L reached Siddhirganj site with no apparent damage and are kept under the custody of EPC contractor		
Owner's Engineer (Contract Side)	Engineer (EGCL Side)	Project Director
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
Comments:		

**SIDDIRGANJ 335 MW COMBINED CYCLE POWER PLANT - BANGLADESH**

PACKAGE №	TYPE OF PACKAGE	CONTENT				WEIGHT KG.		SIZE IN CENTIMETERS			CBM
		QUANTITY	UNIT	DESCRIPTION	IDENTIFICATION OF PART	NET WEIGHT	GROSS WEIGHT	Length	Width	Height	
09-03323-1003AA056	CASE	1	ud	HRSB - BALANCE OF ALL EQUIPMENT	003AA	11,138,07	14,242,23	876,86	406,3	216,15	76,99
09-03323-1003AA057	CASE	1	ud	HRSB - BALANCE OF ALL EQUIPMENT	003AA	228,16	500,54	178,13	147,12	127,1	3,33
Z packages						11,366,23	14,742,77				80,32





## Annexure-5

- Analysis of the data/comments regarding implementation and problems of the project collected from the people involved in the project implementation (table 9.1.1)
- Analysis of the comments from the local people around the project (tables 9.3.1 and 9.3.2)



**9.1.1 Analysis of the collected data/comments from the people involved in the project regarding implementation and problems**

Sl. No.	Questions	Answers	Number of Respondents	Number of Respondents in Percentage
01	Are you involved in the project implementation? If not, then how long do you observe this project work?	No Comments	1	5.55%
		Involved	17	94.50%
02	Do you have any idea regarding problem or obstacle in project implementation	No Comments	9	50%
		Hartal, Accident	3	16.67%
		There are some approved electrical drawings not consistent – will affect operation and maintenance works	4	22%
		Lack of experience of the contractor	4	22%
		Security issue for the foreigners	1	5.55%
03	There are delays on project implementation resulting in shifting of project completion dates. Please provide information regarding this if you have any.	No Comments	5	27.78%
		Hartal, Political unrest	9	50%
		Lack of experience of the contractor in implementing this type of large projects	10	55.55%
		Mismanagement of the sub-contractors	1	5.55%
		Lack of good relations between client and the contractor	1	5.55%
		Technical problems e.g., soil consolidation, transportation, equipment hiring etc. Besides, suddenly stopping ongoing works.	8	44.45%
		Bureaucratic	1	5.55%
04	Do you think that the combined cycle power plant concept should be continued to be used for future power plant construction? Of not,	No Comments		
		Thinks logical	17	94.45%
		Do not think logical (scarcity of natural gas)	1	5.55%

Sl. No.	Questions	Answers	Number of Respondents	Number of Respondents in Percentage
	please describe the causes behind it.	Dual fuel type	1	5.55%
05	Please describe the advantages and disadvantages of combined cycle power plant.	No Comments	-	
		High efficiency (~60%)	18	100%
		Use less fuel	2	11.11%
		Less waste and low environment pollution	9	50%
		can be used as peaking and base plant	1	5.55%
		Low per unit cost (generation cost)	8	44.45%
		High investment cost	8	44.45%
		Complex and high maintenance cost	5	27.78%
		Liquid and gaseous fuel only	1	5.55%
		Require large quantities of water	2	11.11%
		Large number of alarm and fault signals	1	5.55%
		Peoject implementation is lengthy.	2	11.11%
06	Black smoke from the exhaust gas and CO2 and waste from the plant are harmful to the environment. Please comment on how to keep these harmful effects to the minimum level.	No Comments	2	11.11%
		In GE 9FA, turbine with DLN 2.0+ emission system	5	27.78%
		Using up to date and modern technology the level can be kept at the minimum level.	5	27.78%
		Using dry low NOx technology; CEMS	5	27.78%
		Using better quality and pure fuel	2	11.11%
		ETP to reduce harmful effect of waste water	1	5.55%
		Stop simple cycle	1	5.55%
07	Do you think that this type of generating plant can be	No Comments	-	0.00%
		Possible	18	100%

Sl. No.	Questions	Answers	Number of Respondents	Number of Respondents in Percentage
	implemented by local engineers and technicians?	Not possible	-	0.00%
08	Please comment on the initiative to complete this type of project by local human resources and local finance	No Comments	2	11.11%
		Possible by local human resources and local finance	14	77.78%
		Possible by local human resources but local finance not possible	2	11.11%
09	Do you support to form Core Technical Teams consisting of capable engineers and technicians from government and private organizations for installing new generating unit? Please describe your constructive proposal of you have any.	No Comments	2	11.11%
		Support	15	83.33%
		Training required	5	27.78%
		Logistic support	1	5.55%
10	Please comment on the per unit generating cost of the combined cycle power plants	No Comments	4	22.22%
		Taka 1.5-1.8	5	27.78%
		Taka 1.45-2.00	6	33.33%
		Less costly than open or simple cycle power plants (less than GT or ST)	5	27.78%
		Cost can be reduced if the river water is free from pollution requiring very less chemical to treat	1	5.55%



Analysis of the collected data/comments from the local people around the project regarding project implementation and its problems and importance and probable economic contribution of the project:

Table 9.3.1 Sex and Occupation of the Respondents

Sl. No.	Type of Respondents	Number of Respondents	Percentage of Total
Based on Sex:			
1	Male	156	78.00
2	Female	44	32.00
	Total	200	
Based on Occupation:			
1	Businessman	83	41.50
2	Service	23	11.50
3	Teacher	7	3.50
4	Engineer	3	1.50
5	Household works	26	13.00
6	Lawyer	1	0.50
7	Sales Representative	2	1.00
8	Journalist	4	2.00
9	Nurses	4	2.00
10	Eockshaw puller	3	1.50
11	Driver	9	4.50
12	Rechnician	11	5.50
13	Gaements Worker	3	1.50
14	Daily Labour	9	4.50
15	Tailor	4	2.00
16	NGO Worker	1	0.50
17	Kabiraj	1	0.50
18	Barber	1	0.50
19	Farmer	1	0.50
20	Student	1	0.50
21	Not Known	4	2.00

Table 9.3.2 Number of specific comments from the local people around the project and its percentage of the total:

Sl. No.	Questions	Answers	Number of Respondents	Number of Respondents in Percentage
01	Have you affected in any way due to this project? (a) Yes (b) No	(a) Yes	9	4.50
		(b) No	191	95.50
02	If yes, then how?	Increase in temperature	2	1.00
		Vibration	1	0.50
		Sound pollution	1	0.50
		Security during accident	1	0.50
		Waterlogging due to the project	2	1.00
		Dusts and traffic jam	2	1.00
03	Have observed any problem in implementation of this project? (a) Yes (b) No (Please describe)	(a) Yes Delays in project implementationn	12	6.00
		(b) No	188	94.00
04	Have you observed any problem in your locality due to this project implementation? (a) Yes (b) No (please describe)	No Comments	1	0.50
		(a) Yes 1. Dusts – 1 2. Traffic jam – 7 3. Bad condition of roads – 8 4. Delays – 1 5. No comments - 2	19	9.50
		(b) No	180	90.00
05	Do you think that there will be any permanent problem due to this project implementation? Please describe.	No Comments	11	5.50
		No	150	75.00
		(a) Yes 1. Environinment – 17 2. Traffic jam – 1 3. Residential problem – 2 4. Increase in temperature – 9 5. No comments - 10	39	19.50



Sl. No.	Questions	Answers	Number of Respondents	Number of Respondents in Percentage
06	Do you think that there is any threat to the environment due to this project? (a) Yes (b) No	No Comments	8	4.00
		(a) Yes	114	57.00
		(b) No	78	39.00
07	If there is any threat then how – (a) Air pollution (b) Sound pollution (c) Water pollution (d) Others (Please specify)	No Comments	49	24.50
		(a) Air pollutions	80	40.00
		(b) Sound pollutions	97	48.50
		(c) Water pollutions	32	16.00
		(d) Others	0	0.00
08	Do you think that this project have contribution to the economic development in your area? (a) Yes (b) No	No Comments	8	4.00
		(a) Yes	190	95.00
		(b) No	2	1.00
09	Do you think that this project will contribute to your profession or to the maintenance of your daily life? (a) Yes (b) No	No Comments	1	0.50
		(a) Yes	172	86.00
		(b) No	27	13.50
10	Do you think that implementation of this project will result in an improvement of power system of the country? (a) Yes (b) No	No Comments	1	0.50
		(a) Yes	199	99.50
		(b) No	0	0.00
11	Is there any employment opportunity in your area due this project? (a) Yes (b) No (Please describe)	No Comments	5	2.50
		(a) Yes	60	30.00
		(b) No	135	67.50
12	Do you think that it would be logical to implement more project like this in your area? (a) Yes (b) No	No Comments	1	0.50
		(a) Yes	189	94.50
		(b) No	10	5.00
13	In which of the following sectors there will be important contributions of the project?			
	(a) Easy electric connection		192	96.00
	(b) Employment opportunity		117	58.50

Sl. No.	Questions	Answers	Number of Respondents	Number of Respondents in Percentage
	(c) In education		76	38.00
	(d) In health system		38	19.00
	(e) In transportation system		76	38.00
	(f) In business		110	55.00
	(g) To environment		40	20.00
	(h) In establishing factories		116	58.00
	(i) In supply system		33	16.50
	(j) In development of overall standard of life		142	71.00