



**USAID**  
FROM THE AMERICAN PEOPLE



# USAID ENERGY POLICY PROGRAM

## ENVIRONMENTAL AUDIT REPORT ENVIRONMENTAL COMPLIANCE MONITORING OF MUZAFFARGARH THERMAL POWER STATION

VISIT 04

April 2013

*This program is made possible by the support of the American people through the United States Agency for International Development (USAID)*

# USAID ENERGY POLICY PROGRAM

## ENVIRONMENTAL AUDIT REPORT

### ENVIRONMENTAL COMPLIANCE MONITORING OF MUZAFFARGARH THERMAL POWER STATION

#### Visit-04

Submission Date: April 24, 2013

Contract No: AID-EPP-I-00-03-00004

Order No: AID-391-TO-12-00002

©USAID Energy Policy Program  
House 4, Street 88, Sector G-6/3  
Ataturk Avenue, Islamabad, Pakistan  
Tel: +92 (51) 835 7072, Fax: +92 (51) 835 7071  
Email: mshaikh@aeai.net

#### DISCLAIMER

The contents of this document are the sole responsibility of Advanced Engineering Associates International, Inc. (AEAI) and do not necessarily reflect the views of USAID or the United States Government.

# **Contents**

---

<b>1. Introduction.....</b>	<b>1-1</b>
<b>1.1 Environmental Audit Activities.....</b>	<b>1-1</b>
<b>1.2 Progress of Project .....</b>	<b>1-2</b>
<b>1.3 Environmental reporting.....</b>	<b>1-2</b>
<b>1.4 Summary of the results.....</b>	<b>1-2</b>
<b>1.5 Trend .....</b>	<b>1-2</b>
<b>2. Register of Audit Observations .....</b>	<b>2-1</b>
<b>3. Areas of Concern and Corrective Actions .....</b>	<b>3-1</b>
<b>4. Waste Inventory and Disposal Record.....</b>	<b>4-1</b>

## **Appendices**

**Appendix A: Photographs**

**Appendix B: Reference Documents**

## **Exhibits**

---

<b>Exhibit 1.1:</b>	Project Location Map .....	<b>1-3</b>
<b>Exhibit 1.2:</b>	Satellite Image of the Plant .....	<b>1-4</b>
<b>Exhibit 1.3:</b>	Progress of the Project .....	<b>1-5</b>
<b>Exhibit 1.4:</b>	Visit-wise Summary of Non-compliances .....	<b>1-8</b>
<b>Exhibit 1.5:</b>	Visit-wise Trend in Recorded Non- Compliances .....	<b>1-8</b>
<b>Exhibit 2.1:</b>	Register of Audit Observation .....	<b>2-2</b>
<b>Exhibit 3.1:</b>	Areas of Concern and Corrective Actions .....	<b>3-2</b>
<b>Exhibit 4.1:</b>	Waste Inventory and Disposal Record .....	<b>4-2</b>

## **Acronym**

---

AEAI	Advanced Engineering Associates International, Inc
CEO	Chief executive Officer
CRRW	Chief Resident Representative WAPDA
EMMP	Environmental Monitoring and Mitigation Plan
FARA	Fixed Amount Reimbursement Agreement
HBP	Hagler Bailly Pakistan
ET	EMMP Implementation Team of MTPS
HSE officer	Health Safety and Environment Officer
ID	Identification number or code
MTPS	Muzaffargarh Thermal Power Station
NEQS	National Environmental Quality Standards
OHS	Occupational Health and Safety
USAID	United States Agency for International Development
WAPDA	Water and Power Development Authority

# 1. Introduction

---

The Government of United States of America through U.S. Agency for International Development (USAID) is funding Muzaffargarh Thermal Power Station (MTPS) repair and rehabilitation work (the ‘Project’). Advanced Engineering Associates International, Inc. (AEAI) is providing monitoring and implementation support to USAID for the Project and, as part it, has acquired the services of Hagler Bailly Pakistan (HBP) to undertake environmental compliance monitoring of the Project.

The purpose of environmental compliance monitoring is to assess the performance of the implementation team of the Project at MTPS (see **Exhibit 1.1** and **Exhibit 1.2**) against the Environmental Monitoring and Mitigation Plan (EMMP) during the rehabilitation and repair work.

For this purpose, HBP undertook fourth environmental audit (the ‘audit’) at MTPS. The results of the audit are documented in this report.

## 1.1 Environmental Audit Activities

The 4<sup>th</sup> visit for environmental audit was undertaken on April 17, 2013.

The activities undertaken during this visit included:

- ▶ Opening Meeting with the plant management which was attended by the following:
  - ▷ Mr Muhammad Anwar Brohi, Chief Engineer/ Technical Director, – Muzaffargarh Thermal Power Station
  - ▷ Mr Abdul Karim Kumbber, Deputy Director MMS, – Muzaffargarh Thermal Power Station
  - ▷ Mr Muhammad Alyas, Additional Director, Chemical, – Muzaffargarh Thermal Power Station
  - ▷ Mr Tahir, Senior Engineer, Procurement, – Muzaffargarh Thermal Power Station
  - ▷ Mr Muhammad Akram, ARE Phase II, – Muzaffargarh Thermal Power Station
  - ▷ Mr Abdul Rashid Bhatti, Senior Engineer, Phase I, – Muzaffargarh Thermal Power Station
  - ▷ Mr Manzoor Hussain, ARE Unit 4, – Muzaffargarh Thermal Power Station
  - ▷ Noor Kamal Khan, Environmental Expert, HBP
- ▶ Walk through the plant to inspect the storage of equipment and sites, specifically where the Project activities are undertaken under FARA agreement are in progress. This included the following:
  - ▷ New arrival equipment store area where met the store keeper and observed the stored equipment and material

- ▷ Re blading of LP turbine rotor
- ▷ Air pre-heater elements
- ▷ ID Fan Rotor/Impeller and housings
- ▷ Cooling tower fan accessories
- ▷ Economizer tubes
- ▷ Exhaust flue gas ducts
- ▷ Waste storage yard
- ▶ General review of the existing site conditions and OHS practices
- ▶ Closing meeting with MTPS management to review the environmental documents and discuss the preliminary outcome of the audit.

## **1.2 Progress of Project**

On the audit day, major overhauling was underway of Unit 4's turbine.

A brief status of the Project as provided by AEAI and MTPS management is shown in **Exhibit 1.3**.

## **1.3 Environmental reporting**

An effective mechanism for implementation of EMMP during the life cycle of the project is essential. The designated Environmental Team (ET) or HSE officer should prepared the EMMP related report and submit to AEAI, the project implementation unit of USAID and other stakeholder (s) on the regular basis. During the field visit, the plant management has provided latest report attached as **Appendix B.1**.

## **1.4 Summary of the results**

During the audit, old issues revisited and observations were recorded. New issues of non-compliances were also recorded where replacement and rehabilitation work was underway at the plant. Out of 11 issues from the third visit, two were addressed. The remaining issues were discussed with the management of the plant who promised to close, along with new non-compliance observations at earliest. A summary of new, pending and closed issues is presented in **Exhibit 1.4**.

## **1.5 Trend**

The visit-wise trend is shown **Exhibit 1.5**. During the current reporting period, the trend of recorded non-compliances showed increase in number of non-compliances corresponding to the previous visit period, indicates the lake of interested in environment related issue of the project. The ET of the project should take notice seriously for early closure, especially the issues pending from the previous visits.

Exhibit 1.1: Project Location Map

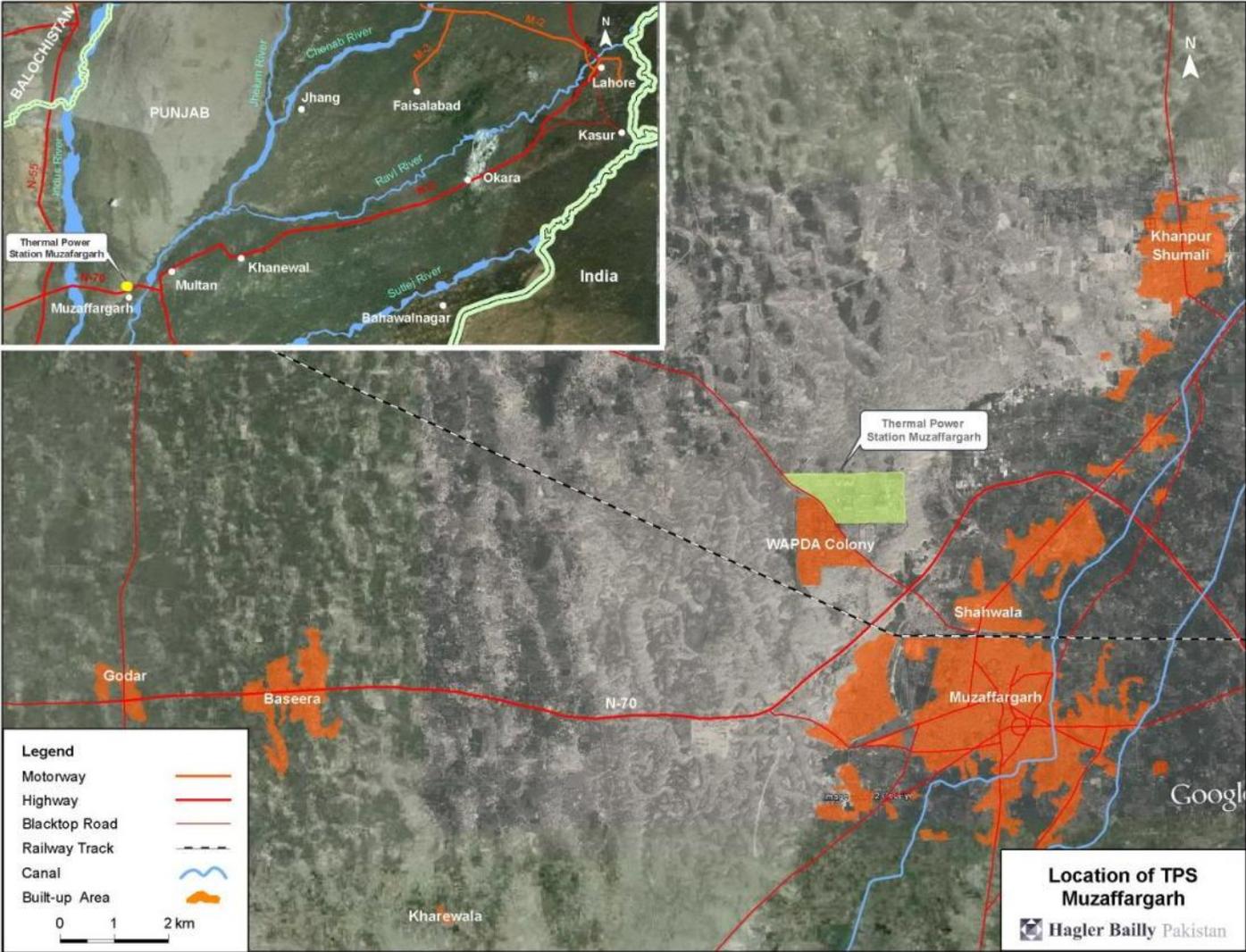
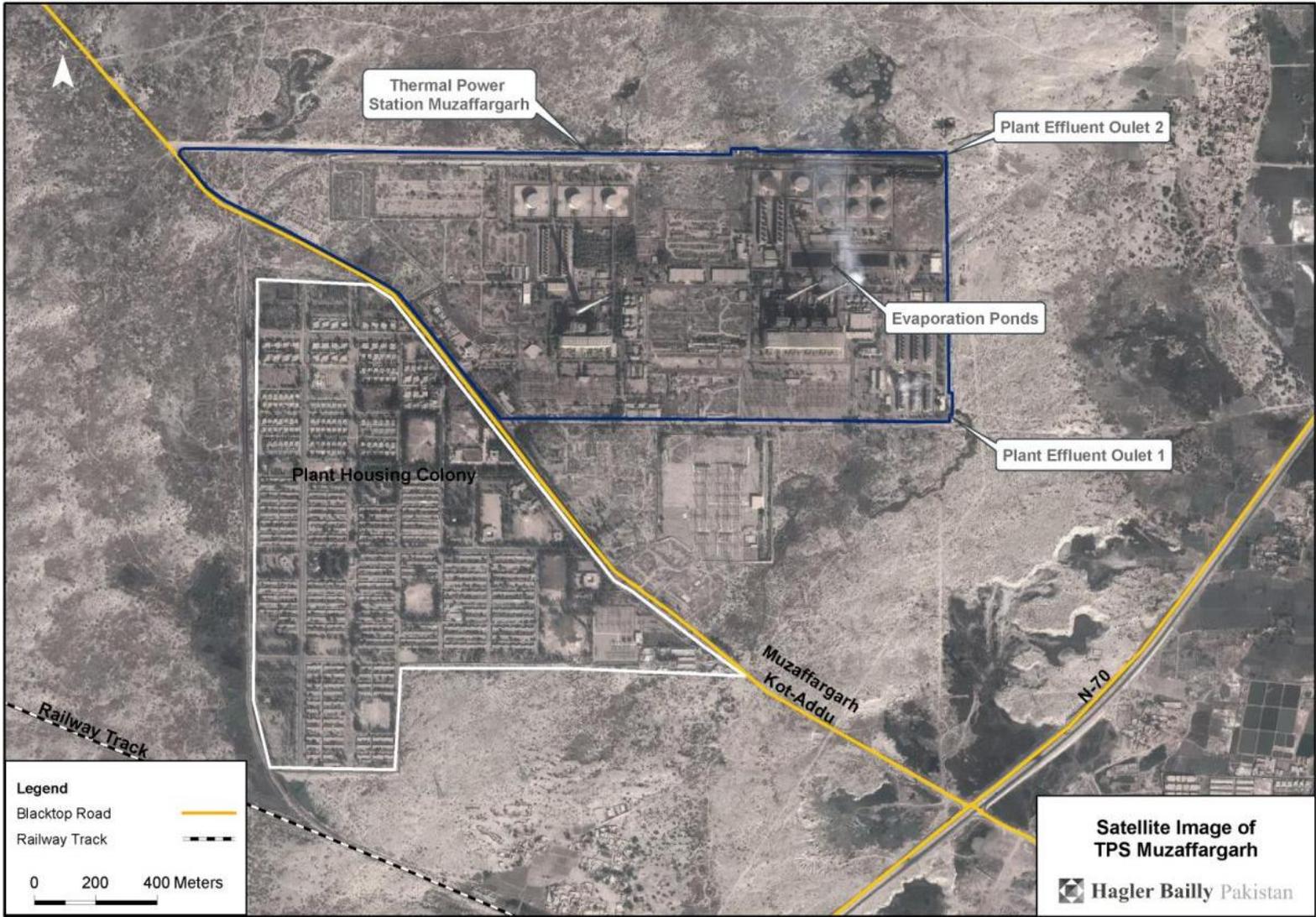


Exhibit 1.2: Satellite Image of the Plant



### Exhibit 1.3: Progress of the Project

Line Item No.	Unit No	Work Item description	Present Status
1	1,2&3	Rehabilitation of boiler super heater tubes to overcome failure of tubes	Items received and installed. Waste (including iron (20,000kg), plastic and packaging) generated from the activity has been stored in the yard until disposal (as per <b>EMMP Ref: Exhibit 4.1</b> ) to be finalized by the plant management.
2	1 to 4	Special Cooling Water Treatment.	LOI Issued on 13.02.2013. Request for foreign exchange cash was made on 01.03.2013.
3	1 to 6	Use of Fuel Oil Additive as done on Unit-4 (450 Tons).	PO issued on 22.11.2012. Cash foreign exchange budget allocated on 11.12.2012 and LC opened.
4	1,2&3	Replacement of Cold layer element for RAH (2 sets)	Items received and installed Waste (including Iron (528 no.), cotton and plastic(200kg) and packaging) generated from the activity has been stored in the yard until disposal (as per <b>EMMP Ref: Exhibit 4.1</b> ) to be finalized by the plant management.
5	1,2&3	Modification of Excitation system (3 set)	Tender opened in April 2012 and Bid Evaluation is in process. LOI to be issued.
6	1,2&3	Electric motors for C.T. Fan (02 No) and for GRC fan. (01 No).	PO was issued on 23.09. 2011 for electric motors while LC opened on 02.02 2012 for GRC fan. Material received at site on 18.10.2012.
7	3	D.C. Storage batteries (01 Set).	Items received and installed. Waste (including packaging, wooden and plastic) generated from the activity has been stored in the yard until final disposal (as per <b>EMMP Ref: Exhibit 4.1</b> ) to be finalized. Battery waste has been auctioned and disposed off as per procedure of the plant (see <b>Appendix E</b> ).
8	1,2&3	220Kv circuit breaker SF6 type (06 No).	LC established on 03.08.2012.
9	4	Re-blading of LP. Rotor (LP Turbine Rotor blades of row (6&7), pins & locking device).	Items received and installation is in progress
10	4	Air Pre-Heater Elements (Intermediate and Cold) 02 sets	Items received and installed. Waste (including iron, cotton and plastic, and packaging) generated from the activity has been stored in the yard until disposal (as per <b>EMMP Ref: Exhibit 4.1</b> ) to be finalized by the plant management.

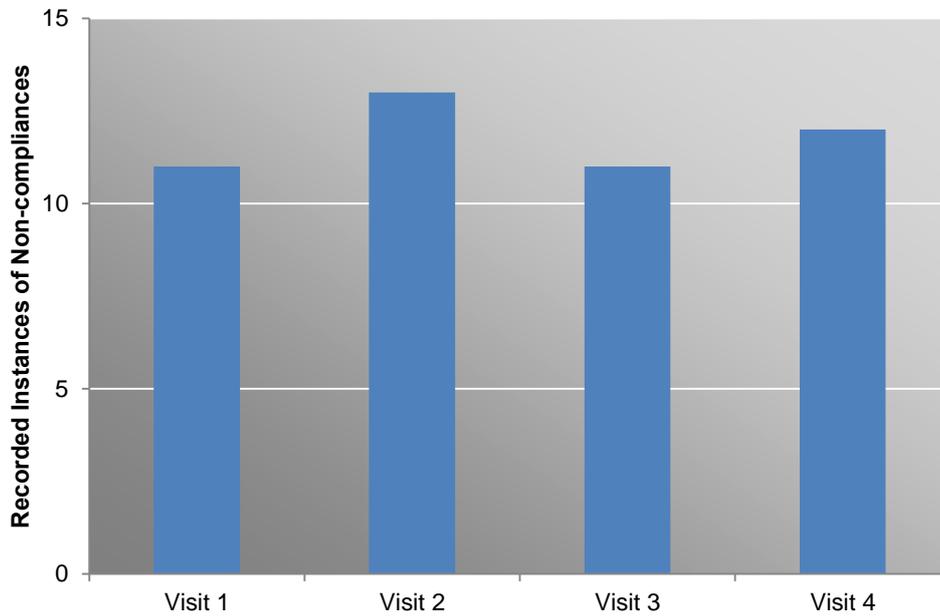
<i>Line Item No.</i>	<i>Unit No</i>	<i>Work Item description</i>	<i>Present Status</i>
11	4	Up-gradation of AVR System (01 set).	PO issued on 20.07.2012. LC opened on 12.10.2012.
12	4	Changing of UPS 1&2. (01 set).	Procurement under process
13	4	DEH (01 set).	Tender opened on 27.02.2013 and under evaluation process.
14	4	Up-gradation of FSSS System (01 set).	Tender opened on 27.02.2013 and under evaluation process.
15	4	Up-gradation of TSI system BNC 3300 or equivalent (Turbine Supervisory Instrument) (01 set).	Tender opened on 27.02.2013 and under evaluation process.
16	1-6	Training and software/hardware cost for CMMS and off-line efficiency monitoring system. All Units	Tender opened on 31.01.2013 and under evaluation process.
17	5&6	I.D. Fan Rotor/Impeller along with Housing and Dampers (04 Set).	Items received at Plant and replacement work is underway. Waste generating during the work is temporarily stored on the ground then shift to the yard until disposal (as per <b>EMMP Ref: Exhibit 4.1</b> ) to be finalized by the plant management
18	5&6	Air Pre heater Elements Hot end, intermediate & cold end layers along with seals for both units (04 Set).	Items partially received. Hot end elements received
19	5&6	Procurement of G.R.C. Fan Impeller/Rotor (01 Set).	Items received at Plant and to be installed
20	5&6	Procurement of Cooling Tower Fan Gear Box & its parts. (06 No. gear box).	Items received at Plant and partially installed
21	5&6	Economizer Tubes for both Units (02 Sets)	Items received at the plant and to be installed
22	5&6	IP Turbine Rotor (01 No).	PO issued on 14.06.2012. LC established on 12.10.2012.
23	5&6	Replacement of Damaged Exhaust flue gas ducts of material Russian Grade Steel sheets (50 M.T), Plate Type Heat Exchanger for Inner Water Cooling System of Generator and Motor for Starting Oil Pump (Vertical) Units 5-6	Items received at Plant and partially installed

<i>Line Item No.</i>	<i>Unit No</i>	<i>Work Item description</i>	<i>Present Status</i>
24	5&6	Conversion of Boiler Ignition System from Natural Gas to HSD/Furnace Oil	Tenders opened and evaluation completed. LOI to be issued, however NPGCL request to drop the item in the PIL amendment.
25	5&6	Repair of winding and stator of Generators and testing	Draft tender documents sent to GM office on 06.08.2012. Tender opened on 28.11.2012. Technical Evaluation Report sent to G.M (Thermal) Lahore on 04.02.2013 but G.M (Thermal) rejected the technical proposals of both bidders.
26	5&6	Hydraulic coupling of Boiler Feed Water Pumps (01 No).	LOI issued on 13.02.2013 and request for foreign exchange cash was made on 01.03.2013.
27	5&6	Modification of Excitation System	LOI issued on 15.03.2013.
28	5&6	Procurement of 0.4KV Motors for Cooling Towers Fan and APH 02	Items received at Plant and partially installed
29	5&6	Procurement of 6.6KV Motor for C.W. Pumps, CP, ID Fan, FD Fan & BF Pumps (05 No).	Items received at the plant and to be installed
30	5&6	Procurement of 6.6/0.4KV Breaker (5 No. 6KV breaker, 18Nos. 0.4Kv Breakers).	Items received at the plant and to be installed
31	5&6	Protection Relay for Generators.	Tenders opened and LOI issued on 24.02.2012. PO issued on 31.05.2012. LC established on 12.10.2012.
32	5&6	MK Breakers, Seal Oil Coolers, PMG	Items received at Plant and partially installed
33	5&6	Supply, Installation, Commissioning & Testing of complete distributed control system (DCS) including field equipment like sensors, transmitter & actuators etc. for turbine governing system DEH-III and Boiler Turbine Auto regulation system YEWPACK-II	Tender will again open in April.
34	5&6	Rehabilitation of Furnace safety Supervisory System (FSSS) including Furnace camera, flame monitoring & ignition system	Tender again opened on 30.1.2013 and is under evaluation process.

**Exhibit 1.4: Visit-wise Summary of Non-compliances**

<i>Visit No.</i>	<i>Current Issues</i>	<i>Pending Issues</i>	<i>Total Issues</i>	<i>Issue Closed</i>	<i>Average Time Taken (Days)</i>	<i>Open Issues</i>
01	11	–	11	–	–	11
02	02	11	13	02	82	13
03	02	09	11	02	281	11
04	03	09	12	02	119	12

**Exhibit 1.5: Visit-wise Trend in Recorded Non- Compliances**



## **2. Register of Audit Observations**

---

See **Exhibit 2.1** on following pages:

**Exhibit 2.1: Register of Audit Observation**

Serial Number	Issue ID	Visit No.	Issue	Photographic ID	Date Raised	Proposed Corrective Action	Responsibility	Target/ Revised Target Date	Status	Verification	Comments	Addressed Date	Days taken to Address/ Reason of Delay
<b>Pending Issues from Last visits</b>													
01	1-01	01	No evidence was available that the vehicles used for the transportation of project equipment were compliant with the national environmental quality standards (NEQs)	-	April 18, 2012	Vehicles used for the transportation are NEQS compliant for the emissions and noise <b>(EMMP Ref: Exhibit 4.1)</b>	ET	April 18, 2012 (1) October 31, 2012 (2) March 29, 2013 (3) May 17, 2013	No progress	-	MTPS has sent letter to Chief Resident Representative WAPDA, who arrange vehicles for transportation of the equipment to MTPS under FARA, to ask contractor for the compliance of vehicle with the NEQs No response received yet	-	CEO waiting for the response of the letter, sent to CRRW for providing the testing results. No response received yet. HBP have suggested management to send another reminder and tell them that their vehicle will not be allowed with out providing NEQS certificate

Serial Number	Issue ID	Visit No.	Issue	Photographic ID	Date Raised	Proposed Corrective Action	Responsibility	Target/ Revised Target Date	Status	Verification	Comments	Addressed Date	Days taken to Address/ Reason of Delay
02	1-03	01	Training for occupational health and safety has not been scheduled	-	April 18, 2012	Training should be scheduled as per requirement (see <b>EMMP Ref: Exhibit 4.2</b> )	ET	May 1, 2012 (1) October 31, 2012 (2) March 29, 2013 (3) May 17, 2013	No progress	-	HBP suggested to the EMMP implementation team (ET) of the project to initiate trainings of staff from basics, i.e importance and requirement of PPEs in personal safety at work site	-	The management will provide training schedule for the staff before May 05, 2013
03	1-06	01	Storage area for new equipment related to Unit 1, 2, 3, 5 and 6 were not demarcated and labeled	06	April 18, 2012	Storage area will be demarcated. Area will be either marked on the floor or cordoned off by tapes (see <b>EMMP Ref: Exhibit 4.1</b> )	ET	April 25, 2012 (1) October 31, 2012 (2) March 29, 2013 (3) May 17, 2013	No progress	-	Plant management and ET may facilitate store keeper in arrangements	-	No such facility is available with the store keeper

Serial Number	Issue ID	Visit No.	Issue	Photographic ID	Date Raised	Proposed Corrective Action	Responsibility	Target/ Revised Target Date	Status	Verification	Comments	Addressed Date	Days taken to Address/ Reason of Delay
04	1-07	01	Packing material waste record was not maintained and location was not known generated from Units 1, 2 3, 5 and 6	-	April 18, 2012	Inventory of all waste including packing material waste shall be prepared. For each type of waste the quantity and disposal mechanism shall be identified (see <b>EMMP Ref: Exhibit 4.1</b> )	ET	May 1, 2012 (1) October 31, 2012 (2) March 29, 2013 (3) May 17, 2013	Open	-	For some items, generated waste amount has been recorded e.g. line item no.01 and 04.	-	Inventory need to be made for each type of waste generated.
05	1-08	01	Waste (iron, copper, packaging etc.) generated from Unit 5 and 6 were not segregated in waste storage area.	07, 08	April 18, 2012	In the store yard all waste shall be stored separately. No waste shall be stored within the passage way (see <b>EMMP Ref: Exhibit 3.2</b> ).	ET	April 25, 2012 (1) October 31, 2012 (2) March 29, 2013 (3) May 17, 2013	No progress	-	Waste (iron and cotton and wooden) needs to be segregated properly, stored at yard		No reason provided for not following the EMMP

Serial Number	Issue ID	Visit No.	Issue	Photographic ID	Date Raised	Proposed Corrective Action	Responsibility	Target/ Revised Target Date	Status	Verification	Comments	Addressed Date	Days taken to Address/ Reason of Delay
06	1-09	01	Waste storage area of Unit 1, 2, 3, 5 and 6 was not demarcated and labeled.	01, 02, 03, 04	April 18, 2012	In the yard all waste shall be marked (see <b>EMMP Ref: Exhibit 3.2</b> ).	ET	April 25, 2012 (1) October 31, 2012 (2) March 29, 2013 (3) May 17, 2013	No progress	–	Plant management needs to facilitate yard personnel	–	No such facility is available with the personnel at the yard
07	1-11	01	Final disposal of waste(iron, copper, packaging etc) has not been scheduled	–	April 18, 2012	The different types of waste should be timely disposed in accordance with the procedure mentioned in <b>section 3 of EMMP</b>	ET	May 1, 2012 (1) October 31, 2012 (2) March 29, 2013 (3) May 17, 2013	No progress	–	Disposal of non-valued waste such as used cotton, plastic packages and other, needed to be disposed off appropriately.	–	The plant management waiting for all replacement work to be completed for one time disposal and they will provide final waste disposal plan before next audit monitoring i.e May 15, 2013

Serial Number	Issue ID	Visit No.	Issue	Photographic ID	Date Raised	Proposed Corrective Action	Responsibility	Target/ Revised Target Date	Status	Verification	Comments	Addressed Date	Days taken to Address/ Reason of Delay
08	2-01	02	Iron waste stored in 5 and 6 yard is not properly marked.	01, 02, 03, 04	September 19, 2012	In the store yard all waste shall be properly marked and segregated. A clear passage way marked by lines on the ground shall be left for walking of staff. No waste shall be stored within the passage way (EMMP Ref: 3.2).	ET	October 31, 2012 (1) March 29, 2013 (2) May 17, 2013	No progress	–	Yard management personnel need to train on waste management so any waste that generated from the project activities should be documented, demarcated and labeled	–	Untrained yard personnel
09	3-01	03	Personal protection equipment (PPEs) was not used by the workers appropriately noticed during major overhauling work of Unit 4, 5 and 6 turbine	10	March 7, 2013	Appropriate PPE shall be provided to the workers and it shall be ensured that the PPE are used. (EMMP Ref: 4.1). All the staff of the project should be trained to use PPE. Record of all training shall be maintained (EMMP Ref: Exhibit 4.1)	ET of Unit 4 and 5, 6	Immediate	–	–	PPEs need to be available for each worker	–	Complete PPEs were not available to some workers

Serial Number	Issue ID	Visit No.	Issue	Photographic ID	Date Raised	Proposed Corrective Action	Responsibility	Target/ Revised Target Date	Status	Verification	Comments	Addressed Date	Days taken to Address/ Reason of Delay
<b>New Issues from Recent Visit</b>													
10	4-01	04	Oil spills/ leakages were observed near Unit 5 and 6	01	April 15, 2012	Oil shall be stored in designated and clearly marked areas and shall be lined with impervious flooring. The oil storage area shall have dykes constructed around it to control accidental leakages and spills ( <b>EMMP Ref: 3.2</b> )	ET of Unit 5 and 6	Immediate	Open	-	All oil spill/leakage should be collected and need to disposed off at earliest	-	-
11	4-02	04	Solid waste and plastic papers observed at unit 5 and 6	02	April 15, 2012	All type of waste shall be collected and stored in separate bins marked for this purpose ( <b>EMMP Ref: 3.2</b> )	ET of Unit 5 and 6	Immediate	Open	-	All waste should be collected and disposed off properly	-	-

Serial Number	Issue ID	Visit No.	Issue	Photographic ID	Date Raised	Proposed Corrective Action	Responsibility	Target/ Revised Target Date	Status	Verification	Comments	Addressed Date	Days taken to Address/ Reason of Delay
12	4-03	04	Sharp edged metal were observed left behind after completion of work at unit 5 and 6	03 and 04	April 15, 2012	Sharp edged metal shall not be left unattended at any time. It shall be moved to storage yard immediately after removal. In the storage yard, the storage area for such metal shall be cordoned off using clearly visible tapes. (EMMP Ref: 3.2)	ET of Unit 5 and 6	Immediate	Open	-	All waste need to collected and disposed-off appropriately	-	-
<b>Issues Closed</b>													
13	1-02	01	MTPS has not formulated any environmental team to implement EMMP	-	April 18, 2012	Environmental team will be designated at each unit and their job description will be documented (EMMP Ref: section 4.5).	CEO and HSE officer	September 27, 2012	Closed	Yes	An environmental team has formed for each unit for implementation of EMMP	September 25, 2012	160
14	1-05	01	After the machines or equipment were used packing material waste from storage area was thrown at different places	05	April 18, 2012	All type of waste shall be collected and stored in separate bins marked for this purpose EMMP Ref: Exhibit 3.2)	DD (MM S)	April 25, 2012	Closed	Yes	Removed and shifted to yard	April 25, 2012	05

Serial Number	Issue ID	Visit No.	Issue	Photographic ID	Date Raised	Proposed Corrective Action	Responsibility	Target/ Revised Target Date	Status	Verification	Comments	Addressed Date	Days taken to Address/ Reason of Delay
15	1-10	01	No safety measures were taken in storage of the Lead acid batteries	-	April 18, 2012	Proper safety measures should be taken while handling, storage and disposal of these batteries as they contain toxic material ( <b>EMMP. Ref: 3.2</b> ) It is recommended that the batteries should be stored in shed areas away from direct sunlight and rain with impervious floor).	ET	July, 2012 (1) October 31, 2012	Batteries were auctioned as per WAPDA protocols.	Yes	Batteries were auctioned as per WAPDA protocols. The management has provided documentary evidence of final disposal	March 7, 2013	324

Serial Number	Issue ID	Visit No.	Issue	Photographic ID	Date Raised	Proposed Corrective Action	Responsibility	Target/ Revised Target Date	Status	Verification	Comments	Addressed Date	Days taken to Address/ Reason of Delay
16	2-02	02	Quantity and final destination of Lead acid batteries to be provided	-	September 21, 2012	<p>Inventory of all waste shall be prepared. For each type of waste the quantity and disposal mechanism shall be identified and where necessary, audit of the waste contractor (<b>EMMP Ref: Exhibit 4.1</b>)</p> <p>Lead and acid from these batteries should be removed from the used battery cells (<b>EMMP Ref: Exhibit 3.2</b>)</p> <p>The acid may be reused or recycled <b>EMMP Ref: Exhibit 3.2</b>)</p> <p>Proper safety measures should be taken while handling, storage and disposal of these batteries as they contain toxic material (<b>EMMP Ref: Exhibit 3.2</b>)</p>	ET	October 31, 2012	Closed	Yes	<p>Batteries were auctioned as per WAPDA protocols.</p> <p>The management has provided documentary evidence of final disposal</p>	March 7, 2013	238

Serial Number	Issue ID	Visit No.	Issue	Photographic ID	Date Raised	Proposed Corrective Action	Responsibility	Target/ Revised Target Date	Status	Verification	Comments	Addressed Date	Days taken to Address/ Reason of Delay
17	1-04	01	New equipment (such as impellers near Unit 5 and 6 were stored at non designated area in the passage way	-	April 18, 2012	The new equipment shall be stored in properly demarcated and identified areas (see <b>EMMP Ref: Exhibit 4.1</b> )	ET of Unit 4	April 28, 2012 (1) October 31, 2012 (2) March 29, 2013	Closed	Yes	The new equipment were used/installed	March 15, 2013	230
18	3-02	03	Removed cooling tower fans and gear box from Unit 5 and 6 were found at undesignated area	-	March 7, 2013	After dismantling, all parts and machines shall be dispatched from site to storage yard as soon as possible, preferably on the same day ( <b>EMMP Ref: Exhibit 3.2</b> )	ET of Unit 5&6	March 29, 2013	Closed	Yes	Removed items shall be stored in designated area with proper label and demarcation	March 15, 2013	8

### **3. Areas of Concern and Corrective Actions**

---

See **Exhibit 3.1** on following page:

### Exhibit 3.1: Areas of Concern and Corrective Actions

Issue	Issue ID/ Visit No. (see <b>Exhibit 2.1</b> )	Monitoring Indicator(s)	Proposed Corrective Action in EMMP
Vehicles used for the transportation are NEQS compliant for the emissions and noise	▶ 1-01/ 01	Results of the noise and emissions	▶ Vehicles used for the transportation shall be monitored for the emissions and noise ( <b>EMMP Ref: Exhibit 4.1</b> ).
Trainings on occupational health and safety	▶ 1-03/ 01 ▶ 3-02/ 03	Documentation record and walk through audit observations	<ul style="list-style-type: none"> <li>▶ Appropriate PPE shall be provided to the workers and it shall be ensured that the PPE are used (<b>EMMP Ref: Exhibit 4.1</b>).</li> <li>▶ The staff shall be provided with training in use of PPE (<b>EMMP Ref: Exhibit 4.1</b>).</li> <li>▶ Proper scaffolding platforms shall be provided for all work areas located more than 1 m above floor level (<b>EMMP Ref: Exhibit 4.1</b>).</li> <li>▶ First Aid facilities and fire protection devices should be placed in areas where activities will be performed (<b>EMMP Ref: Exhibit 4.1</b>).</li> <li>▶ Ear protection device shall be used if the noise level is above 85 dB(A) (<b>EMMP Ref: Exhibit 4.1</b>).</li> </ul>
Improper solid waste management	▶ 1-05/ 01 ▶ 1-07/ 01 ▶ 1-08/ 01 ▶ 1-09/ 01 ▶ 1-10/ 01 ▶ 1-11/ 01 ▶ 2-01/ 02 ▶ 2-02/ 02 ▶ 3-01/ 03 ▶ 4-01/ 04 ▶ 4-02/ 04 ▶ 4-03/ 04	Quantity of waste generated, their classification and disposal mechanism	<ul style="list-style-type: none"> <li>▶ Inventory of all waste shall be prepared. For each type of waste the quantity and disposal mechanism shall be identified (<b>EMMP Ref: Exhibit 4.1</b>).</li> <li>▶ Where necessary, audit of the waste contractor (<b>EMMP Ref: Exhibit 4.1</b>).</li> <li>▶ Implementation of waste management plan presented in <b>Section 3 of EMMP</b>.</li> </ul>

<i>Issue</i>	<i>Issue ID/ Visit No. (see <b>Exhibit 2.1</b>)</i>	<i>Monitoring Indicator(s)</i>	<i>Proposed Corrective Action in EMMP</i>
Storage of new equipment	<ul style="list-style-type: none"> <li>▶ 1-04/ 01</li> <li>▶ 1-06/ 01</li> </ul>	Walk through audit observations	<ul style="list-style-type: none"> <li>▶ The new equipment shall be stored in properly demarcated and identified areas (<b>EMMP Ref: Exhibit 4.1</b>).</li> <li>▶ Separate storage of each item should be adopted and each area should be marked either on floor or cordoned off by tapes (<b>EMMP Ref: Exhibit 4.1</b>).</li> <li>▶ Lifting equipment (cranes) used for the equipment shall follow the prescribed safety specification tapes (<b>EMMP Ref: Exhibit 4.1</b>).</li> <li>▶ Material Safety Data Sheet (MSDS) for chemicals, if any, shall accompany the consignment. A copy of the MSDS shall be available near the storage area at all times tapes (<b>EMMP Ref: Exhibit 4.1</b>).</li> </ul>

## **4. Waste Inventory and Disposal Record**

---

As part of the EMMP, an inventory of the waste generated during the rehabilitation and repair activities is required. Inventory of various wastes generated during the rehabilitation project is listed in **Exhibit 4.1**. However, the data in the table is taken from the EMMP (except the data for line item no. 1 and 4, which was given by the plant management and provided only to indicate the relative magnitude of the generated waste. The ultimate disposal of the waste is to be provided by the management of the plant.

**Exhibit 4.1: Waste Inventory and Disposal Record**

Line Item No.	Estimated Generated Waste															
	Solid														Liquid	
	Steel/ Iron (kg)	Disposal Status	Copper (kg)	Disposal Status	Wool (kg)	Disposal Status	Batteries (No.)(kg)	Disposal Status	Plastic, Wood, Cloth & Packaging (kg)	Disposal Status	Electronics (kg)	Disposal Status	Soot (kg)	Disposal Status	Oil (liters)	Disposal Status
1	20,000	Kept in yard	-	-	-	-	-	-	50	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	40	-	-	-	-	-	-	-	800	-	-	-	-	-	-	-
4	250 no. Weight: ??	Kept in yard	-	-	-	-	-	-	200	Kept in yard	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	300	-	20	-	-	-	-	-	50	-	-	-	-	-	-	-
7	-	-	-	-	-	-	130	-	400	-	-	-	-	-	-	-
8	10	-	50	-	-	-	-	-	100	-	-	-	-	-	-	-
9	1,500	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-
10	100	-	20	-	-	-	-	-	50	-	-	-	-	-	-	-
11	50	-	100	-	-	-	-	-	-	-	600	-	-	-	-	-
12	100	-	100	-	-	-	12	-	-	-	250	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	50	-	-	-	-	-	100	-	500	-	-	-	-	-

Line Item No.	Estimated Generated Waste															
	Solid														Liquid	
	Steel/ Iron (kg)	Disposal Status	Copper (kg)	Disposal Status	Wool (kg)	Disposal Status	Batteries (No.)/(kg)	Disposal Status	Plastic, Wood, Cloth & Packaging (kg)	Disposal Status	Electronics (kg)	Disposal Status	Soot (kg)	Disposal Status	Oil (liters)	Disposal Status
17	800	-	50	-	-	-	-	-	50	-	-	-	-	-	-	-
18	300	-	-	-	-	-	-	-	50	-	-	-	-	-	-	-
19	10,000	-	500	-	-	-	-	-	100	-	-	-	-	-	-	-
20	4,500	-	100	-	-	-	-	-	100	-	-	-	-	-	-	-
21	200	-	-	-	-	-	-	-	50	-	-	-	-	-	-	-
22	800	-	-	-	-	-	-	-	50	-	-	-	-	-	-	-
23	170,000	-	-	-	-	-	-	-	800	-	-	-	3000	-	-	-
24	100	-	-	-	-	-	-	-	50	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	2,000	-	50	-	-	-	-	-	50	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	10,000	-	100	-	-	-	-	-	100	-	-	-	-	-	-	-
30	100	-	10	-	-	-	-	-	50	-	-	-	-	-	-	-
31	1,000	-	50	-	-	-	-	-	50	-	-	-	-	-	-	-
32	2,500	-	500	-	-	-	-	-	100	-	-	-	-	-	-	-
33	20	-	300	-	-	-	-	-	100	-	1,000	-	-	-	-	-

## **Appendix A: Photographs**

---



**Photograph 01:** Oil spill/leakage observed near Unit 5 and 6



**Photograph 02:** Solid waste and plastic waste observed at unit 5 and 6



**Photograph 03:** Sharp edged metal observed at unit 5 and 6



**Photograph 04:** Sharp edged metal observed at unit 5 and 6

## **Appendix B: Reference Documents**

---

See following pages:

**Appendix B1:** Environmental Report by Plant EMMP Implimentation Team (ET) of  
MTPS<sup>2</sup>

(see following pages)

---

<sup>2</sup> Title page of the report is attached with report, while hard copy of the complete report is handed over to AEAI



## NORTHERN POWER GENERATION COMPANY LIMITED

TeleNo. 066-9200296

Fax No. 066-9200166

No. CEO/MZG/Dir (MMS)/ 4095-96

Head of Project Implementation Unit,  
USAID GTIP Project,  
AEAI, Islamabad.

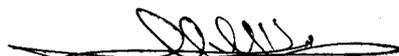
Office Of The  
Chief Executive Officer  
Genco-III, NPGCL, TPS,  
Muzaffargarh

Dated 17/04/2013

Subject: **IMPLEMENTATION OF ENVIRONMENTAL MITIGATION & MONITORING PLAN (EMMP) FOR REPAIR AND REHABILITATION WORK AT MUZAFFARGARH THERMAL POWER STATION.**

It is hereby intimated please that, as per Waste Disposal Plan, proper Handling/Storage of equipment and consequent waste produced hereafter installation, is being ensured.

Further Block wise progress report for the period from March-2013 to date, on the prescribed proforma, by collecting all data relating to procurement/installation and consequent waste generation, as instructed in the EMMP Plan is prepared and is hereby being attached for your information as desired please.

  
Chief Engineer/Technical Director  
NPGCL, TPS Muzaffargarh

DA/Progress Report

C.C To:

- PA to CEO TPS Muzaffargarh.

[www.ep-ep.com.pk](http://www.ep-ep.com.pk)  
[info@ep-ep.com.pk](mailto:info@ep-ep.com.pk)