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ENERGY POLICY PROGRAM
EQUIPMENT INSPECTION REPORT

GUDDU & MUZAFFARGARH THERMAL POWER STATION

NOV-DEC 2013

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USAID/PAKISTAN:
ENERGY POLICY PROGRAM (EPP)

Guddu & Muzaffargarh Equipment Inspection Report

Contract No: AID-EPP-I-00-03-00004 **Order No**: AID-391-TO-12-00002

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Contents

Background

Guddu Thermal Power Station

Most of the equipment and material required for uprate of Units 5, 7 and 8 of 600 MW Combined Cycle Power Plant was received at TPS Guddu. It was scheduled to be jointly inspected by Central Power Generation Ltd. (CPGCL) and General Electric (GE) in presence of Insurers' representative. But due to communication gap, this inspection was being delayed. Previous correspondence by CPGCL was being done by courier service which was reportedly not received by GE. EPP, therefore, sent emails to CPGCL and GE apart from persuasion on phone. Consequently, GE informed that their representatives would be available at site on November 26, 2013. EPP representative, Ghulam Abbas Malik thus proceeded to Guddu to participate in Kick-Off meeting scheduled on November 26, 2013.

Muzaffargarh Thermal Power Station

Most of the flow meters were found defective by SGS-Pakistan during calibrations therefore, EPP provided support in purchasing the required number of new flow meters. These flow meters were delivered at Muzaffargarh by AEAI. The information regarding these flow meters (Tech: Specs of PO and allocation of meters) was handed over to the concerned maintenance engineer on November 29, 2013. Their detailed inspection was carried on December 2, 2013 in presence of EPP Procurement Specialist and the supplier's representative. Installation of flow meter on Unit 4 started on December 3, 2013.

Equipment inspection

Guddu Thermal Power Station

Pursuant to EPP mails sent both to CPGCL and GE to start joint inspection at an early date, GE agreed to send two of their Technical Supervisors to TPS Guddu. Previously, CPGCL was sending letters (dated Nov. 8 & 12, 2013) to GE giving perspective dates which according to GE were not received. A kick-off meeting was held on November 26, 2013 in the meeting room of Plant Manager-III, 600 MW CCP, Guddu according to the schedule conveyed by CPGCL (Annexure '**A**') and pursued by AEAI.

The following were the participants of the meeting:

CPGCL REPRESENTATIVES

-	Mr. Moula Bakhsh Laghari	Plant Manager-III
-	Mr. Muhammad Hassan Chang	Manager (Material Management)
-	Mr. Ejaz Ahmad Khoso	Electrical Engineer
-	Mr. Arjumand Wasti	Mechanical Engineer
-	Mr. Saeed Ahmed Shaikh	Instrument Engineer

M/s. GENERAL ELECTRIC

-	Mr. Mehmood-ul-Hassan	GE Representative
-	Mr. Aamir Wakil Khattak	GE Representative

USAID-EPP

-	Ghulam Abbas Malik	Sr. Energy Expert

After having discussion on the procedure of joint inspection and remaining documentation of uprate equipment and material, it was decided that:

1. G.E. will provide the missing documents related to the equipment delivered as and when noticed during joint inspection.
2. GE Representatives will work with local team of engineers to identify the equipment and material with respect to Purchase Order.
3. The work will be started immediately and will continue without observing weekends.
4. An office order will be got issued from CEO by Manager (Material Management) streamlining the procedure of joint inspection with CPGCL's team members names.
5. It was also decided that daily progress reports will be sent to all stakeholders by email.
6. All the signatories of daily report will sign accordingly.
7. CPGCL management will facilitate the G.E team for proper orientation of boxes for ease of identification by all concerned.

After concluding the meeting, joint inspection was started and by evening, seven (7) packages having around 20 boxes were inspected. On 27th another 29 packages were jointly inspected. Two days reports in brief are attached as Annexure **'B'**. During inspection, it was revealed that PO has several amendments for which CPGCL will be requested to provide copies.

The issuance of office order (serial # 4 above) was delayed by Material Management section and issued on 27th November (copy at Annexure '**C**'). Some important procedural steps like signing of reports simultaneously and dispatch to all stakeholders were missed intentionally.

Observing from the daily progress of joint inspections, it appeared that the present spell will complete within two weeks. However, another three consignments have arrived at Karachi Port for which inspectors will start work after these consignments reach the site. Photographs of the uprate equipment and material are attached as Annexure **'D'**.

Muzaffargarh Thermal Power Station

Most of the flow meters were found defective by SGS-Pakistan during calibrations; therefore, EPP purchased the required number of new flow meters. In all twelve (12) flow meters were procured, eleven for Muzaffargarh and one for unit # 4 at TPS Guddu. These flow meters were delivered at Muzaffargarh by AEAI. The information regarding these flow meters (Tech: Specs of PO, technical literature and allocation of meters) was handed over to the concerned maintenance engineer on November 29, 2013. Their detailed inspection was carried on December 02, 2013 in presence of EPP Procurement Specialist and the supplier's representative. Installation of flow meter on Unit 4 and Unit 2 started on December 3, 2013.

A signed copy of Joint Inspection Certificate is attached as Annexure '**E**' and photographs at Annexure '**F**'.

Each flow meter had its own box, serial number, installation instructions, calibration certificate (a specimen attached as Annexure 'G') and technical information in CD. The inspecting Instrument engineers were advised to keep the factory calibration certificate pertaining to their plants securely for production to Independent Engineer during Heat Rate Tests.

Installation of flow meters by respective Plant Manager would not be a problem and can be accomplished within two weeks. Units 1, 2 & 3 had the return flow meters of the same size as new ones therefore; no modifications in piping are required. Whereas, on forward lines, the extension pieces of pipes put in during a previous retrofitting have to be removed. However, all the flange sizes were found the same as with new flow meters. The return line of Unit 4 required a little bit of modification. Flow meter at Unit 4 was installed quickly.

The Independent Engineer (PES) has been informed about the installation of flow meters and advised to start calibrations of energy meters from TSG (WAPDA/NTDC) as early as possible. Since at present only one unit 3 was in operation, therefore, upon starts of remaining units (late December and January, 2014) PES can start the testing under intimation to all concerned by GHCL.

Annexure

Annexure 'A'

PEPCO

Central Power Generation Co. Ltd.

(GENCO-II)

☎ 0722 578113, 0722578311 Ext-301/262
0722 – 578328
genco2_guddu@yahoo.com

Office of the
Chief Executive Officer
GENCO-II, T.P.S, GUDDU

No. CPGCL/MMM/PM-III(M)/P.O-09/ 32185-90 Date: 21 /11/2013

M/s. General Electrical International,
12th Floor, Office # L-12-MT Area Software,
Technology Park, 346-B,
Ferozepur Road, Lahore.
Tel: 042-042-35989742
Fax: 042-35972184
Cell: 042—3074444259

Subject: - SCHEDULE OF SURVEYOR FOR SURVEY OF MATERIAL AGAINST P.O. NO. 09/ CEO/CPGCL/PM-III(M)/UPRATE/FARA/6549-58 DATED 10.04.2012

Reference: This office letter Nos.
1. CPGCL/MMM/PM-III(M)/P.O.09/31486-89 dated 08.11.2013
2. CPGCL/MMM/PM-III(M)/P.O.09/31739-42 dated 12.11.2013

It is intimated with great concern that despite above referred letters (copies enclosed), your representative have not visited this power station to witness the joint survey of the material.

The survey of the consignment is being postponed and new date for the same is fixed as on 26.11.2013.

You are, therefore, finally advised to please ensure the presence of your representative on the aforesaid date positively. In case of failure, joint survey of the material will be started from 19.11.2013 and findings of the joint survey committee shall be binding on you in case of shortage /missing of any items is found.

Manager (Material Mgt.)
For Chief Executive Officer
Genco-II TPS Guddu

c.c.to:-

1. General Manager (Thermal) PEPCO, 197-Wapda House, Lahore.
2. Resident Representative, Wapda, 39-C, Block-6, PECHS, **Karachi.**
3. The Chief of Party, Advanced Engg. Associates Incorporated (AEAI) House No.4 Street #88, G-3/1, Islamabad. along with above referred letters and requested to please stress upon M/s. GE, Lahore for deputing their representative to witness the survey.
4. Plant Manager-III, TPS Guddu.
5. M/s. Bashir-A-Khan & Co. (Pvt.) Ltd. Khan Chamber 2143/A, Ward No.9, Near Chowk Chanta Ghar, Abdali Road, Multan.

ICB/Survey

Figure 1: Schedule conveyed by CPGCL for survey of Material

Annexure 'B'

Power Generation Services Quality Manual

DAILY INSPECTION REPORT

Revision 1.5
09/24/2012
Author: Aitor Ibarzabal

Site:	**CPGCL, Guddu Pakistan**	**Workscope: Uprate Parts Inspection and Verification**
Date : 26-Nov-13		Shift: Day
FE: Mahmood		Unit SN: 282546, 282547, 197996

Completed Work

- ✓ Arrived at CPGCL site office
- ✓ Customer Meet and greet
- ✓ Kick off meeting with customer, USAID rep, Surveyor and insurance rep
- ✓ Following packages were opened, inspected and verified against PL/PO with no discrepancy or defect found therein.

1. IW0540257
2. IW0530339
3. IW0530343
4. IW0375187
5. IW0530342
6. IW0530337
7. IW0530346

- ✓ All opened and inspected boxed labeled as checked

Power Generation Services Quality Manual

DAILY JOINT INSPECTION REPORT

Site: CPGCL, Guddu Pakistan **Workscope:** Uprate Parts Joint Inspection/Verification

Date : 27-Nov-13	Shift: Day
FE: Mahmood	Unit SN: 282546, 282547, 197996

Completed Work

- ✓ Daily morning meeting with customer.
- ✓ Shifted/prepared packages for inspection.
- ✓ Following packages were opened, jointly inspected and verified against PL/PO with no discrepancy or defect found therein.

1. IW0539341
2. IW0539340
3. IW0530344
4. IW0377611
5. IW0529593
6. IW0377608
7. AW28981
8. AW28704
9. AW28702
10. AW28411
11. AW28410
12. AW28412
13. AW27994
14. AW28419
15. AW8420
16. AW28979
17. AW28977
18. AW28980
19. AW28409
20. IW0259
21. IW0375193
22. AW28422
23. AW28423
24. AW28418
25. AW28976
26. AW28421
27. AW28974
28. AW28971
29. AW28408

- ✓ All opened and inspected boxed labeled as checked
- ✓ After inspection, all opened boxes secured properly.

GE FE (PGS)	Asst. Manager Mech	Dy. Manager Mech	Plant Manager III
Sign:	Sign:	Sign:	Sign:

Figure 2: Joint Inspection Report of Material at Guddu TPS

Annexure 'C'

Central Power Generation Co. Ltd.
(GENCO-II)

0722 578113, 0722578311 Ext-301/262
0722 – 578328
genco2_guddu@yahoo.com

Office of the
Chief Executive Officer
GENCO-II, T.P.S, GUDDU

No. CEO/CPGCL/MMM/PM-III(M)/Uprate/Fara/ 32898-904 Date: 27/11/2013

OFFICE ORDER

As a consequence of uprate material receipt at site and kick off meeting held on 26.11.2013, the Technical committee comprising of the following officers is hereby constituted to carryout joint survey of the consignment against purchase order No. 09/ CEO/CPGCL/PM-III(M)/UPRATE/FARA/6549-58 dated 10.04.2012.

1. Deputy Plant Manager (Maint)) 600MW CCP .... Convener
2. Dy. Manager Mechanical (ST) 600MW CCP ... Member
3. Deputy Manager (I&C) 600MW CCP .... Member
4. Deputy Manage(Elect.) 600MW CCP ... Member
5. Representative of Manager (MM) .... Member

The representative of following companies will be available and they will help in identification of survey equipment and material.

Representative of

1. M/s. General Electric Intl. Lahore (M/s.Mehmood ul-Hassan & Amir Khattak)
2. M/s. Bashir.A.Khan, Multan Insurance Surveyor – (Mr. Abdul Hameed)

This issues with the approval of worthy C.E.O. Genco-II TPS Guddu

27/11/13
Manager (Material Mgt.)
For Chief Executive Officer
Genco-II TPS Guddu

c.c.to:-

1. Chief Executive Officer, Genco-II TPS Guddu.
2. Chief Engineer/T.D, Genco-II TPS Guddu.
3. Plant Manager-III, TPS Guddu.
4. Mr. Ghulam Abbas Malik, Sr. Energy Expert, USAID-EPP, House No.4, Street No.88, G-6/3, Islamabad(gabbas @ ep-ep.com.pk)
5. All concerned officers.

ICB/office order

Figure 3: Office Order for the kick off meeting at Guddu TPS

Annexure 'D'

Figure 4: Equipment at Guddu TPS

Figure 5: Equipment in boxes at Guddu TPS

Figure 6: Opening of Equipment's boxes at Guddu TPS

Figure 7: Equipment's at Guddu TPS

Figure 8: Joint Inspection team at Guddu TPS

Figure 9: Equipment's at Guddu TPS

Annexure 'E'

USAID-Energy Policy Program

MATERIAL RECEIVING REPORT

SUPPLIER NAME: SPEEDY AUTOMATION
ADDRESS: Plot # 186-A, Ghulam Ali Memon Road, S.M.C.H.S. Karachi
BENEFICIERY : Muzzafargarh-GENCO-Punjab

PRF NO / DATE: EPP-C1=PRF-001 dt 15/05/2013
P.O. NO.: EPP-C4-PO-007
MRR NO.: EPP-C4-MRR-007
MRR DATE: 2/12/2013

Sr. No.	Item Code	Complete Description	Unit of Measurement	Quantity	Unit Rate EUR	Total Amount EUR
1		Heavy Fuel Oil Flow Meters based upon Caricilis (Promass) flow principle suitable for process Fluid Temperature Range:100-120 C (Nominal:120 C) and Process Fluid Flow Range: 10MT/h, Nominal; 50 MT/h and maximum 60MT/h applicable for the size 3 inches (DN80)	Nos.	3	7,897	23,691
2		Heavy Fuel Oil Flow Meters based upon Caricilis (Promass) flow principle suitable for process Fluid Temperature Range:100-120 C (Nominal:120 C) and Process Fluid Flow Range: 10MT/h, Nominal; 50 MT/h and maximum 60MT/h applicable for the size 3 inches (DN80)	Nos.	3	7,897	23,691
3		Heavy Fuel Oil Flow Meters based upon Caricilis (Promass) flow principle suitable for process Fluid Temperature Range:100-120 C (Nominal:120 C) and Process Fluid Flow Range: 10MT/h, Nominal; 50 MT/h and maximum 60MT/h applicable for the size 3 inches (DN80)	Nos.	2	7,897	15,794
4		Heavy Fuel Oil Flow Meters based upon Caricilis (Promass) flow principle suitable for process Fluid Temperature Range:100-120 C (Nominal:120 C) and Process Fluid Flow Range: 10MT/h, maximum 45MT/h applicable for the size 1 1/2 inches	Nos.	2	4,992	9,984
5		Heavy Fuel Oil Flow Meters based upon Caricilis (Promass) flow principle suitable for process Fluid Temperature Range:100-120 C (Nominal:120 C) and Process Fluid Flow Range: 10MT/h, maximum 45MT/h applicable for the size 1 1/2 inches	Nos.	1	4,992	4,992
6		Heavy Fuel Oil Flow Meters based upon Caricilis (Promass) flow principle suitable for process Fluid Temperature Range:100-120 C (Nominal:120 C) and Process Fluid Flow Range: 10MT/h, Nominal; 50 MT/h and maximum 60MT/h applicable for the size 3 inches (DN80)	Nos.	1	7,897	7,897
7		FCA + CPT by Air Freight to Karachi / Lahore				5,590
		Total Amount in EUR				**91,639**

Prepared By: Shafqat Ismail
Name & Sign

Check By: M. Asad Sardar

Inspected by:

Received By:

Store Keeper (Acting)
TPS Muzaffargarh

(RAS HID AHMED ISHAQI)

Figure 10: Joint Inspection Certificate of Fuel Flow Meters

Annexure 'F'

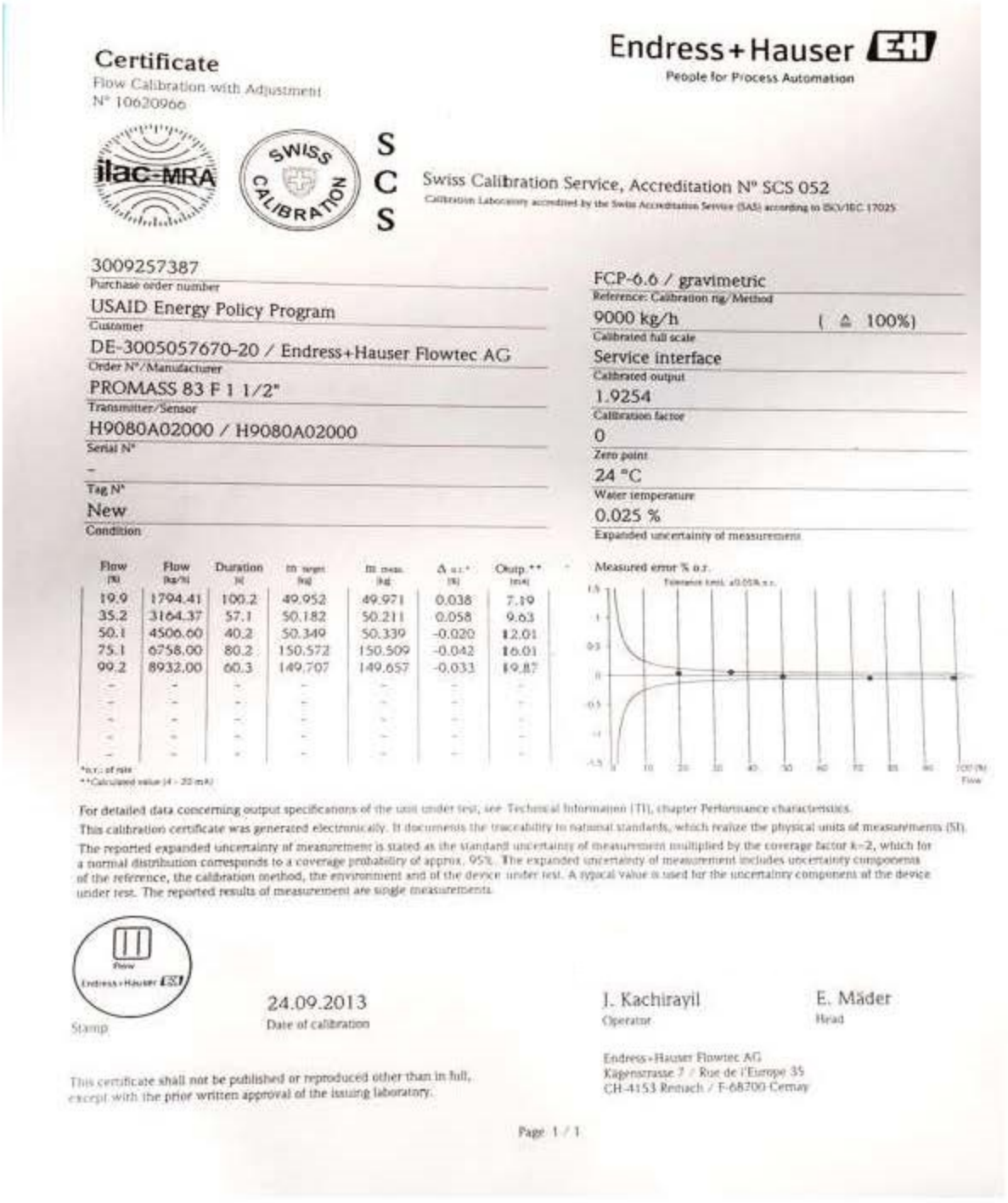
Figure 11: Fuel Flow Meters in boxes at Muzaffargarh TPS

Figure 12: Fuel Flow Meter

Figure 13: Installed New Fuel Flow Meter

Figure 14: Bar Code of EPP at New Fuel Flow Meters

Annexure 'G'



Endress+Hauser
People for Process Automation

Certificate
Flow Calibration with Adjustment
N° 10620966

Swiss Calibration Service, Accreditation N° SCS 052
Calibration Laboratory accredited by the Swiss Accreditation Service (SAS) according to ISO/IEC 17025

3009257387 (Purchase order number)	FCP-0.6 / gravimetric (Reference: Calibration rig/Method)
USAID Energy Policy Program (Customer)	9000 kg/h (≙ 100%) (Calibrated full scale)
DE-3005057670-20 / Endress+Hauser Flowtec AG (Order N°/Manufacturer)	Service interface (Calibrated output)
PROMASS 83 F 1 1/2" (Transmitter/Sensor)	1.9254 (Calibration factor)
H9080A02000 / H9080A02000 (Serial N°)	0 (Zero point)
– (Tag N°)	24 °C (Water temperature)
New (Condition)	0.025 % (Expanded uncertainty of measurement)

Flow [%]	Flow [kg/h]	Duration [s]	m target [kg]	m meas. [kg]	Δ o.r.* [%]	Outp.** [mA]
19.9	1794.41	100.2	49.952	49.971	0.038	7.19
35.2	3164.37	57.1	50.182	50.211	0.058	9.63
50.1	4506.60	40.2	50.349	50.339	-0.020	12.01
75.1	6758.00	80.2	150.572	150.509	-0.042	16.01
99.2	8932.00	60.3	149.707	149.657	-0.033	19.87
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–

*o.r. = of rate
**Calculated value (4 - 20 mA)

Measured error % o.r.
Tolerance limit: ±0.05% o.r.
Flow

For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.

This calibration certificate was generated electronically. It documents the traceability to national standards, which realize the physical units of measurements (SI).

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approx. 95%. The expanded uncertainty of measurement includes uncertainty components of the reference, the calibration method, the environment and of the device under test. A typical value is used for the uncertainty components of the device under test. The reported results of measurement are single measurements.

Stamp

24.09.2013
Date of calibration

J. Kachirayil
Operator

E. Mäder
Head

Endress+Hauser Flowtec AG
Kägenstrasse 7 / Rue de l'Europe 35
CH-4153 Reinach / F-68700 Cernay

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Figure 15: Fuel Flow Meter Certificate