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# USAID ENERGY POLICY PROGRAM

## MONTHLY REPORT AUGUST 2011 REHABILITATION OF TARBELA HYDROPOWER PLANT

USAID: TARBELA FIXED AMOUNT REIMBURSEMENT AGREEMENT  
NO. 391-TDR-FARA-002-00

**September 2011**

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

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## 1. SUMMARY

The report presents progress on monitoring and support for Tarbela Rehabilitation program for the month of August 2011. A visit to Tarbela Hydro Power Plant was conducted by a Senior Energy Expert from AEAI to verify the completion of works and current status of the Repair and Rehabilitation of Tarbela Power Plant.

Overall there were no delays in the Procurement of generator windings and all windings have arrived at site as per schedule. WAPDA has placed orders for the purchase of new Digital Governors and SCADA System expected to be installed by end May 2012. This new system will help in improving the operations which, in turn, will result in higher generation availability of turbine units and higher production.

The installation and testing of Unit # 4 Generator Stator Winding with Class F insulation was completed on May 12, 2011. On September 6, 2011 the unit was operating at full load of 195 MW at reservoir level of 1550 ft. Prior to shutdown and with old Class B winding, the unit was operating at 87 MW, thus there is a net gain of 108 MW at this reservoir level. During visit Unit #4 generator stator temperatures were checked and these were within acceptable limits and well below the alarm limits. Class F Windings for Unit 1 and 3 have arrived at site and the units will be shut down after high flow season is over (from mid September), and the installation and commissioning for these units will be completed by end May 2012.

Subsequent to the completion of all shipping documents for windings # 4, 1 and 3 and opening of separate dollar account by WAPDA, the payment of US \$ 9,509,917 has been reimbursed in WAPDA account. Total financial progress as of today is about 57.64%.

During EP Experts visit to the Tarbela power station on Dec 31, 2010 baseline data for units 1, 3 and 4 was collected to assess the present generation capacity before rehabilitation and the new energy Capacity after the rehabilitation of these units , so that the total energy gain can be determined. Based on the data collected, the estimated overall improvement in generation is expected to be 128 MW.

## 2. PROGRESS ON MONITORING AND SUPPORT

Lot no.	Description of Work	COMPLETION DATES				Remarks
		FARA	Tarbela Schedule	Last Month	Current Month	
1	Replacement of Damaged Generator Stator Windings with Class F Insulation Windings, Unit#4	May 31, 2011	May 31, 2011	May 31, 2011	May 12, 2011	The installation of Class F winding for unit # 4 has been completed on May 12, 2011 and has been verified. <b>Reimbursement processed and received by WAPDA for US\$ 370,000 (10%) on Jun 04, 2011 and US\$ 3,330,000 (90%) on Feb 28, 2011.</b> <b>Complete amount for this equipment has been reimbursed.</b>
2	Replacement of Damaged Generator Stator Windings with Class F Insulation Windings, Unit#3	Dec 31, 2011	Dec 31, 2011	Dec 31, 2011	May 31, 2012	Class F winding for unit # 3 has arrived at Tarbela. WAPDA to shutdown the unit after high flow season is over and the tentative schedule of the unit if from Feb 01, 2012 to May 31, 2012. <b>Reimbursement processed and received by WAPDA for US\$ 2,479,917.</b>
3	Replacement of Damaged Generator Stator Windings with Class F Insulation Windings, Unit#1	Sep 30, 2011	Nov 30, 2011	Nov 30, 2011	Dec 31, 2011	Unit # 1 winding arrived at Karachi port on Feb 5, 2011 and has arrived at Tarbela in the end March. Wapda to shutdown the unit after high flow season is over (from mid September) <b>Reimbursement processed and received by WAPDA for US\$ 3,330,000 (90%).</b>
4	Upgrading of the SCADA System, Units 1-14	Dec 31, 2011	Dec 31, 2011	Dec 31, 2011	Dec 31, 2011	WAPDA placed purchase order for the SCADA system.
5	Spare Seals & Guides for Relief and Bypass Valves on Turbine Side, Units 1-10	Oct 01, 2011	Dec 15, 2011	Dec 15, 2011	Dec 15, 2011	Purchase Order issued on Nov 24, 2010 for supply of seals and L/C has been established. Shipment of material is expected in Oct 2011.
6	Replacement of Electromechanical Governors by Digital Ones, Unit 1-10	Dec 15, 2011	Dec 15, 2011	Dec 15, 2011	Completion is expected as per FARA schedule. Dec 15, 2011	WAPDA placed purchase order for the Governors to GE. Shipment of material is expected in Dec 2011.

<b>7</b>	Replacement of Worn out Station Drainage and Dewatering Pumps, Units 1-10	Dec 15, 2011	Dec 15, 2011	Dec 15, 2011	Completion is expected as per FARA schedule. Dec 15, 2011	Purchase Order for the pumps issued by WAPDA and L/C has been established. Shipment of material is expected in Dec 2011.
<b>8</b>	Training	Dec 15, 2011	Dec 15, 2011	Dec 15, 2011	Completion is expected as per FARA schedule. Dec 15, 2011	Tarbela / WAPDA Staff is finalizing the issuance of Purchase Order. Training will be carried out at Switzerland in three groups and each for a period of 21 days.

### 3. CRITICAL ISSUES AND USAID/AEAI SUPPORT REQUIRED

<b>Item no.</b>	<b>Critical Issues</b>	<b>Status/Resolution</b>	<b>USAID/AEAI Support</b>
1	Shutdown of Tarbela Units for installation of equipment under FARA. This is the most critical issue which could possibly cause delays.	WAPDA approved the shutdown of Unit # 1 from September to December 2011 and for Unit # 3 from January 2012 to May 2012 to replace old windings.	AEAI is providing support to WAPDA / Tarbela Staff in order to optimize the schedule making best use of time and resources for meeting the FARA timelines.
2	In order to expedite the FARA schedule, WAPDA/Tarbela Power Station would require additional staff during the replacement of windings for Units 1 and 3.	Tarbela Chief Engineer has already made a formal request to the offices of Chief Engineers' Mangla, Ghazi Barotha and Warsak hydro-power stations.	On request of AEAI/USAID, WAPDA authorities have agreed to expedite the FARA schedule by adding temporary staff from Mangla, Ghazi Barotha and Warask hydro-power stations.

#### **4. ACTION ITEMS FOR NEXT MONTH**

- I. Plan for unit # 1 shutdown to start dismantling and installation of class F windings.
- II. As Unit # 3 windings were shipped without spares, so place PO again for these spares.

#### **5. BASELINE GENERATION DATA FOR UNITS 4, 1 and 3**

During site visit of EP Experts on Dec 31, 2010 following generation data was recorded and is summarized below;

Unit No	Present Capacity	Capacity after Winding Replacement	Overall Improvement
4	87 MW	195 MW	108 MW
1	185 MW	195 MW	10 MW
3	185 MW	195 MW	10 MW

Overall Improvement in Generation: 128 MW

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