



## Project Information Sheet Darunta Hydroelectric Power Station - Rehabilitation

### Rehabilitation, upgrade, and modernization ensures long-term reliability

Implementing Partner	AEAI
Project Start Date	October 2004
Anticipated Finish Date	March 2006

#### Overview

The Darunta Hydroelectric Power Station is located on the Kabul River, approximately 7 km west of the center of Jalalabad, the capital of Nangarhar Province in Eastern Afghanistan.

Darunta was constructed in the early 1960s as a key part of a comprehensive development program that included construction of irrigation systems, roads, collective farms, power generation, and transmission and distribution facilities. The power plant was planned, designed, and built by companies from the Soviet Union, with a total installed capacity of 11.55 MW. The plant, currently operating at 9.5 MW, is the only source of power for the electrical distribution system of Jalalabad and surrounding areas in Nangarhar.

During the turmoil of the last few decades in Afghanistan, the Darunta Hydroelectric Power Station gradually deteriorated due to war damage and the lack of operations and management resources and replacement parts.

#### Project Description

USAID is rehabilitating and increasing the capacity of Darunta to 13.5 MW in two phases:

The short term, phase 1 objectives of the rehabilitation activities are:

- To improve the reliability of the power plant by purchasing equipment, parts and materials needed for immediate repairs
- To provide the plant staff with the tools needed to maintain the plant over time
- To train plant staff and those from other plants whenever possible to enhance system maintenance

The long term, phase 2 objectives are:

- To rehabilitate, upgrade and modernize the Darunta Hydroelectric Plant to ensure long-term reliability
- To increase the existing capacity by 40 % (4 MW)
- To significantly upgrade the skills of staff at Darunta and other power plants to enable them to continue operations and management using the industry's best practices and international standards



*Old battery cells, now being replaced*



*Power plant staff repairing generator insulation after fire in May 2005*



## Progress to Date

The prime accomplishments at Darunta relate to the existing staff's new acquired ability to conduct and manage operations and their ability to respond to breakdowns more effectively. This has meant improved reliability of the power plant that in turn has had a direct impact on the economic strength of the Nangarhar area in and around Jalalabad. With reliable power, households and businesses can reduce their use and dependence on very expensive diesel and gasoline generators.

Specific accomplishments include:

- Supplying plant staff with new and replacement tools
- Providing equipment and parts needed to replace the plant's DC operation and emergency power supply
- Purchasing materials and spare parts needed for efficient operation and quick repair of the power plant
- Introducing modern test instruments and training staff in the use of all the new instrumentation
- Preparing scanned copies of the 45 year old prints of project drawings, many of which were worn out from constant use, as a permanent record for use in phase 2 rehabilitation efforts
- Introducing and enforcing safe working practices at Darunta, including providing new or rehabilitated safety equipment for staff use

## Planned Work

The future goal, to be accomplished in phase 2, will be to modernize the plant and increase its capacity. Existing plant staff using tools, materials and new equipment, under technical guidance and supervision provided by USAID contractors will do the modernizing and upgrading of the Darunta Hydroelectric Power Station.

Specific work will include:

- Replacing the existing turbine runners with fixed blade runners thereby providing an increase in power of up to 40% (9.5 – 13.5 MW).
- Replacing generator coils, installing new regulators and new digital metering, and protection and control systems
- Extensive rewiring and re-piping
- Refurbishing gates and cranes

- Clearing sediment near gates and other areas



*Control Room*