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COLORADO RIVER COMMISSION
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Mr. Craig Pyper, Hydropower Program manager
Colorado River Commission of Nevada
555 East Washington Avenue, Suite No. 3100
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Subject: IRP 2007-2008 Action Plan

Short Term

- Continuous replacement of inefficient electrical equipment
- Continuous replacement of low-efficiency lighting throughout the plant
- Upgrade and modify existing processes for better efficiency
- Improve process cycles through "Theory of Constraints Procedures"

2006-2007 Status Report

- The titanium sponge production facility (Vacuum Distillation Process) has been expanded 43% and is up and running as of April 2007. The expansion included high efficiency motors and silicon controlled rectifiers (SCR) units to control the reduction and distillation furnace electrical heaters. The energy savings from the installation of the SCR units on a total of 13 furnaces and related equipment such as vessel lids and joint-pipes is calculated to total 645,600 KWH annually.

- The second-generation chlorinator is budgeted and assigned to Process Engineering for scoping and justification studies. Formal engineering on the chlorinator is slated for 2008-2009. This second generation chlorinator will improve and simplify the Purification process and reduce the amount of effluent that is currently discharged to the Water Conservation Facility thereby reducing the amount of energy used to pump, filter, and purify the feed materials.

- The evaluation and design report on the new Machine Shop facility has been completed and the relocation of the shop is scheduled for 2008. Energy savings because of the new facility will be realized because of high efficient lighting, motors and reduced overall operations. The energy savings on this project remains at the estimated 220,000 KWH annually.

- The ammonia system used to provide refrigerant to the Purification Process heat exchangers was replaced in 2006 and this initially replaced a four-compressor plant. The new ammonia system was expanded to include two high efficiency compressors thereby permitting the decommissioning of the sister four-compressor system. This amounts to a total of 940,000 KWH for both vintage systems.

- The "Theory of constraint Procedure" is in place and reviewed in the Management's daily morning meeting. The purpose of this procedure is to recommend, study, design, and implement process cycle time reduction. The procedure ultimately eliminates the need to increase capacity by new systems and additional energy use requirements.

- As listed in the 2005-2006 IRP report, the magnesium cell lid maintenance program is continuing. This program reduces cell down time and improves the cell heat control process. As cell count increases, the KWH savings increase.

2007-2008 Action Plan

- Startup and Operation of the Titanium Sponge manufacturing facility expansion is scheduled for 2007 and 2008. The ramp up in production equates to bringing magnesium electrolysis cells, the reduction and vacuum furnaces, and support equipment on line without abusing the energy use schedules set for the expansion program.

- The machine shop relocation feasibility study has been completed and the final design and construction of the new facility is scheduled for 2008.

- Replacement of two aged air compressors is scheduled for 2008. The new units shall have energy saving features incorporated in the design and operation.

- A titanium-melting furnace will be installed in the Quality Control Laboratory. The basic design of the melting furnace shall reduce the pounds per KWH requirement for each ingot melted.

- Various equipment replacement projects are scheduled for the Titanium Tetrachloride Plant and the Melting Facility. All replaced equipment such as electrical motors, transformers, motor control centers and PLC's shall be of high-energy efficient design.

2007-2012 (Five Year Plan)

- Continue the infrared monitoring program to eliminate high resistance points in transmission cables and electrical equipment.

- Installation of a Magnesium Recovery electrical bus by-pass switch to allow the isolation of any one electrolysis cell to be isolated from the electrical bus grid without tapping down the rectiformers. Isolation of one cell will improve the power factor of the building and reduce electrical consumption.

- Replacement of Double Melt Furnace bus bar with water-cooled cables to improve the efficiency of the process and reduce the resistance losses caused from inadequate bolted bus joints.

- Replace the existing cooling system in Melting. The new cooling tower shall be equipped with energy efficient pump and fan motors to reduce the energy consumed for each gallon of water pumped and cooled.

Sincerely:

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Henderson Facility