

ARMY CORP OF ENGINEERS

Lake Abiquiu Pump-Down Barge



Mike Trumbature

The Army Corp of Engineers wanted to install a hydro-electric generator in the lake's dam and planned to do so when the water level was the lowest. [Power Machinery Inc.](#) designed and built the barge at their Houston Texas facility. I designed, built and installed the controls for the engine, vacuum pumps and barge.

The barge was built in three 12' X 36' sections, each section with two 500 HP Cummins engines and Worthington bottom suction pumps. Three of the engines have stub shafts on the front for front-drive, reverse rotation. To save marginal engine horsepower, they use water-cooled heat exchangers in lieu of radiators.

Vacuum pumps were used to prime the pumps. The START button on the engine panels starts the generator driven vacuum pumps, pulling the air out of the pumps through air release/vacuum valves mounted on top of the pump case. Level switches under the valves sense the flooded case and start the engines, a discharge pressure switch shuts down the vacuum pumps automatically.

A radio paging and annunciator system was installed inside the barge controller to alert nearby personnel of a problem. The pumps were used to pump the water out of the lake up over the top of the dam with hoses into a basin on the other side while the work was done. When finished, the barge was dismantled then reassembled on the other side of the dam and the remaining water in the basin pumped back into the lake.

[Abiquiu Dam](#)
[Worthington Bottom-suction Pump](#)
[PROJECT PHOTO ALBUM](#)