

**Spillway Gate Damaged at Wanapum Dam, Priest Rapids Project, FERC No. 2114-WA, Grant County PUD No. 2 (GCP), Licensee.**

On Tuesday July 12, 2005, GCP notified the D2SI-PRO that while Gate 12 was being opened to pass flows for downstream fish migration, a malfunction in the left lifting chain mechanism occurred which left the gate inoperable and in the closed position. Wanapum Dam has 12 spillway gates, each 65-feet-high by 50-feet-wide, with a discharge capacity of approximately 100,000 cfs per gate at normal reservoir level.

The Priest Rapids Project, located on the Columbia River in Grant County, Washington, about 150 miles southeast of Seattle, Washington, consists of two major components; the Priest Rapid Development, completed in 1961; and the Wanapum Development, completed in 1963.

The Wanapum Development, classified as having a high downstream hazard potential, includes a powerhouse with ten turbine-generator units; a 5,750-foot-long earth embankment section; a 424-foot-long concrete gravity section; an 823-foot-long gated concrete spillway section next to the Future Unit Section; a 540-foot long intake structure with a space for six future generating units; and a 1,000-foot-long intake powerhouse. The total dam length is 8,537 feet. The maximum height from the deepest excavation to the crest of the dam is 186.5 feet. The reservoir is 38 miles long and has a surface area of about 23 square miles. Without Gate 12, the spillway can pass a flood far in excess of the flood of record which occurred in 1948 and had a peak discharge of approximately 648,000 cfs. The spillway can pass the PMF flow of 1,400,000 cfs.

A notched bulkhead was installed on the upstream face of the dam in front of Gate 12 a number of years ago to allow for top of reservoir discharges to help in downstream salmon migration. Gate 12 is raised to the full open position when releases are made from the bulkhead notch so that the fish do not impact the gate. The gate has been opened full height each evening and closed each morning for the past two years. Each gate is operated with a single drive motor, located on the left side, connected to a common drive shaft that connects to a drive sprocket. A link type hoist chain runs from the top of the pier, down to an idler sprocket near the third point on the gate and back up to the drive sprocket. After passing over the drive sprocket, the link chain passes through a guide housing on the downstream face of the pier.

At approximately 18:00 hours on July 11, 2005, the control room began raising Gate 12 so that releases could be made through the bulkhead notch. It takes about 80 to 90 minutes to raise the gate to full height. After approximately 80 minutes the operator checked the gate status and noted that the gate controls showed erratic readings. GCP staff were sent to the spillway to investigate the erratic readings and found the Gate 12 left hoist chain was off the drive sprocket and bunched up in the guide housing. The gate upper left guide roller and lower right guide roller had been sheared off and concrete on the top of the left pier had minor damage. The left hoist chain came off the sprocket so staff returned the gate to the fully closed position at approximately 1:00 AM Tuesday morning using only one hoist chain. The gates were redesigned in the early 1990's to be lifted by only one hoist chain. The loss of the guide roller resulted in damage to the gate

right side seal and edge of the skin plate. With the gate closed, leakage past the damaged area was estimated to be 100 to 200 cfs. Appropriate resource agencies were notified of the loss of the fish spill facility and contingency plans are being developed.

D2SI-PRO staff visited the site on July 13, 2005 to inspect the gate damage. GCP has retained a failure specialist with Exponent Failure Analysis Associates (EFAA) to evaluate the damage, gate malfunction and determine the underlying cause. D2SI-PRO staff will perform a special site inspection in conjunction with the EFAA representative's site visit on July 15, 2005. The licensee was requested to file copies of EFAA's report with D2SI-PRO when available.

The licensee has filed a Section 12.10(a) report with the D2SI-PRO. The licensee was requested to file a description of the proposed remedial measures.