Glen Canyon Spillway Tests Successful

A recent testing program of the left spillway at Glen Canyon Dam shows the repair and modification to be successful. It was announced today by Clifford Barrett, Regional Director of the Bureau of Reclamation. During the tests, up to 50,000 cubic feet per second (cfs) were run through the spillway tunnel. It was operated a total of 72 hours.

"The air slot that was installed in the upper part of the tunnel has virtually eliminated the problem of erosion by cavitation, which has long plagued dam designers," Barrett stated. During its rapid descent through the spillway, the falling water literally jumps the air slot, a 4-foot deep, 4-foot wide notch, and thereby picks up a cushion of air bubbles.

Two separate types of tests were conducted. A step-test at various flows up to 50,000 cfs was conducted to verify the model that was used to design the spillway modifications. Two separate duration tests of 24 hours, at a flow of 20,000 cfs, caused no damage.

Installation of air slots was only part of the large spillway repair and modification that has been underway since the destructive flows of 1983, which seriously damaged both of Glen Canyon Dam's 41-foot diameter spillways. Since it was used longer at higher flows, the left spillway took the brunt of the damage, although the right spillway was also damaged. A contractor, Guy F. Atkinson, of San Francisco, has been working on the spillways on an emergency basis since July 1983. Cost of the repair is estimated to be about $33 million.
Completion of the repair and installation of the air slot in the right spillway will be completed within the next few weeks.

During the tests, biologists from Reclamation and the Arizona Game and Fish Department carefully monitored impacts on the trout fishery in the Colorado River below the dam. Because warmer surface water was being released through the spillways, it was necessary to mix it with colder water drawn from deeper levels through the outlet works. Small temperature rises were observed as anticipated, but no adverse trout impacts were reported.

"This test validates the design of the air slots and the effectiveness of the repairs that have been made to the Glen Canyon Dam spillways," Barrett said. "While we hope that the spillways will not be needed again, I think that we can say with assurance that they will be ready if they are. And they will function without the damage that we experienced last year."

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