

RIPARIAN RELEASE CONDUIT FOR NAM NGIEP 1 HYDRO ELECTRIC PROJECT, LAOS



- CLIENT** : IHI Asia Pacific Ltd., Singapore/ Japan
- EQUIPMENT** : 2 x 1100 dia. Rising Spindle Gate Valve with Auma Spur - Bevel gear box
- DUTY** : 76 MWC Operating head, for release of dam water, infrequently, valve orientation - vertical
- SPECIFICATION** : DI with Bronze (LG-2) trim, st. st. AISI 431 spindle



The valve was manufactured complying fully with the specs given by client, inspected thoroughly (stage wise by IHI engineers) and supplied. Both the valves fixed into a short pipeline and then concrete poured leaving half the valve buried within with only a tiny chamber kept on top for the operator to come in and operate the valve.



PROBLEM

The exact nature of duty was not known to us ie. the valves were in near terminal position and when open there was free discharge without resistance of downstream water. Even at 30 m water column, the velocity of discharge was easily 20 m/s, not designed for such duty.

While the valve was all right soon after commissioning, at some point, due mostly to the exceedingly high velocity, one of the door rings came off, that's when the enormity of the problem became clear. Obviously wrong kind of valves had been chosen. A needle valve (Plunger type) / Larner Johnson Valve would have been more appropriate.

SOLUTION

Any valve with separate seat rings was doomed. The space available could not accommodate any other valves. Drawing from our past experience (we had supplied all iron gate valves without rings to Kagera sugar factory In Tanzania during 1980, 25 years later they procured some more valves from us) we decided to provide no rings in the DI body and weld deposited integral Monel face in the door, precisely machined and lapped to yield a near drop tight seat. 2 new valves were thus built in record time and sent to Laos. A team of 2 technicians and one engineer were sent to site, the valve in knocked down condition winched up, piece by piece along the inclined wall of the dam, lowered through the small aperture in the roof, the valve assembled and commissioned.



It was indeed a defining moment when the main valve was operated and a mighty jet, all of 1100 dia. in size, of dam water rushed past with a thunderous roar in to the deep ravine, disintegrating into millions of drops akin to rainfall from a cloud burst.



Opening and closing of valves was almost effortless owing to the design and gear box selection.

