

HYDROPLUS AND GEI: Winners of ASDSO Annual Design Award for Black Rock Dam Rehabilitation

The 2002 National Rehabilitation Project of the year Award was received by Hydroplus Inc. and GEI Consulting Engineers on September 10 in Tampa, Florida during the annual banquet of the ASDSO (Association of State Dam Safety Officials, USA).



Downstream view of spillway equipped with Fusegates

The purpose of the annual award is to confer national recognition for the use of technology, creativity, and economy in the rehabilitation of dams in the US and in the world.

Hydroplus and GEI were selected for their work on the Black Rock dam (New Mexico).

Black Rock was classified as high risk by BUREC under their Safety Evaluation of Existing Dams (SEED) program due to its inability to pass large floods without overtopping. The probable Maximum Flood (PMF), which was chosen as the design flood for dam safety

modification, corresponded to an overtopping of the dam by several feet. A failure was very likely to occur under this overtopping condition.

The alternative solutions for the rehabilitation of the dam, developed as part of the SEED program by the Pueblo of Zuni (dam owner) consisted of the following:

- providing a new spillway on the right abutment of the dam
- overtopping protection (RCC) on the downstream of the dam
- enlargement of the existing left abutment spillway.

After evaluation of the alternatives against cost efficiency and suitability, the choice was the construction of a free emergency spillway in addition to the existing service spillway, equipped with labyrinth crested steel Fusegates.

The innovative approach of the Fusegate Spillway, not only increased the discharge capacity by 600%, but also reduced the environmental impact of the rehabilitation.



LYELL DAM

Defusing the situation

At Lyell dam, the construction of six Fusegates of 3,20 m high (designed for high overspilling heads) was completed end of march 2002 to the satisfaction of the client, Delta Electricity. This project marks the first reference of Hydroplus in Australia.

The Fusegate System was selected to replace the existing rubber dams which failed in two occasions, in 1997 and 1999. In this case, the System restores the storage capacity whilst still providing spillway capacity for the design flood. Because of the freeboard available at Lyell dam, it was possible to design the Fusegates such that none tip before the 20 000 AEP flood.



HYDROPLUS AWARDED

Lyell Dam:

A Project of Excellence

On October 11th, Hydroplus and Sinclair Knight Merz were jointly awarded a regional prize for excellence by the Australian Institute of Engineers for the Restoration of Storage Capacity at Lyell Dam. This honour was presented in the category : Engineering for Regional communities, at a gala event attended by 700 people.

This industry event is organized annually to recognize project teams for outstanding engineering achievement. The selection is based on innovation, project management, originality, ingenuity, environmental sustainability and benefits to the community.

The Lyell dam project has also been chosen to be made into a model and exhibited to the general public for a year at the Sydney Power House Museum.

NEW CONTRACT

Dartmouth here we come

Hydroplus was awarded in June 2002 a contract for engineering services related to the raising of Dartmouth reservoir operated by Southern Hydro and located in the Victoria Province in Australia.

At Dartmouth regulatory dam, the raising will be achieved with a total of ten labyrinth Fusegates, each 5.8 m wide, 3.3 m high and 17.6 m in length measured along the developed labyrinth crest. Under such configuration, the existing Full Supply Level of RL 311.30 m will be raised to RL 314.60 m thus increasing the storage capacity by 3510 ML or 70 %.

Provisions are made in the design to take into account the difficulty of access to the spillway sill. Construction works are expected to start in spring 2003. Hydroplus is working with GHD, an Australian consulting firm, on this challenging project.

KHROBROVSKAIA DAM (RUSSIA)

One Year On in an Ice-Affected Environment

Khorobrovskaia dam is a hydro power project located 120 km North of Moscow, Russia and completed in October 2001. It also serves as a testing facility for the study of the stability of Fusegates in ice-affected projects, under reservoir level changes, thermal expansion and floating ice.

Spillway monitoring was performed during the 2001-2002 winter. Despite severe operating conditions (60 cm thick ice layers upstream, freezing of the Fusegates and floating ice), no displacement or noticeable deformation of Fusegate elements was observed.

The remarkable behavior of the Fusegates in ice-affected environments confirms the results of the model tests undertaken in 1994 at the Institute for Marine Dynamics of the National Research Council (NRC) in St. John's, Newfoundland, Canada and in 1995 by the Scientific Research Institute of Energy Structures (NIIES) in Moscow, Russia.



Recent Papers and Forthcoming Conferences

- *Defusing the situation*
By W.D. Hakin, Hydrotec Pty;
P. Siers, Delta Electricity;
P. Solomon, Sinclair Knight Merz
Water Power & Dam Construction, Oct. 2002, p.18
- *Increasing the Full Supply Level*
Dartmouth Regulation Dam
ANCOLD 2002 - Adelaide, Australia
- *Restoration of Storage Capacity at Lyell Dam using Hydroplus Fusegates*
Design and Construction Stages
ANCOLD 2002 - Adelaide, Australia

*Our Best Wishes
for the New Year!*

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