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Abstract of his Lecture:

“Concrete Face Rockfill Dams - benefits and concerns - a geological/geotechnical perspective”

In the year 2000, ICOLD dedicated a symposium to discuss the remarkable progress achieved in the design of Concrete Face Rockfill Dams (CFRDs). With numerous modifications and details introduced over some 50 years the CFRD gained reputation as a simple, cheap and safe design offering versatility to cope with site conditions, construction materials and almost unrestricted in size. However, this development resulted almost exclusively from an empiric process and little effort had been invested in analytic verification.

Subsequently, on 3 large dams the concrete faces unexpectedly suffered significant damage. The incidents called for an explanation and prompted efforts to study the interaction of the embankment and the concrete face. This was found to constitute a highly complex system and most advanced 3D software models were needed to simulate the observed performance of the dams and to arrive at a stage of understanding that promises the possibility to reduce the risk in projects of new CFRDs.

The presentation briefly outlines the main advantages of the CFRDs, describes important features of their design and, primarily from a geological-geotechnical point of view, states concerns relevant to the foundation and the construction materials of these dams. Causes of unsatisfactory performance as well as remedial options are mentioned and illustrated by several case histories.