

Hydraulic and operational safety evaluation of some existing Portuguese large dams

EDUARDO R. SILVA, Institute of Water, Lisbon, Portugal.

JOSÉ ROCHA AFONSO, Institute of Water, Lisbon, Portugal.

JOVELINO MATOS ALMEIDA, Institute of Water, Lisbon, Portugal.

SYNOPSIS. The Portuguese Regulations for Safety of Dams came into force in 1990, after being published as a Decree-law. Since then some rules and guidelines concerning the different stages of the life of dams have also been published, to complete and to help the application of the law.

Following the occurrence of problems during flood events in 1995-96, with the overtopping of a few small dams, and with incidents at some large dams, that could be controlled but, nonetheless, were of great concern, the Portuguese authorities decided to launch a specific program for the safety reassessment of the existing large dams in the country.

For that purpose 11 calls for tenders were made for the study of 38 large dams, concerning all aspects of structural, hydraulic and operational safety, and also including studies of the downstream valleys for dam failure scenarios.

The safety studies were based on all the hydrological data available today, on the original projects and other elements related to dam features, on behaviour records and on site inspections. Some relevant conclusions were reached in these studies. It was also shown that in some cases safety did not comply with present regulations.

The results from the evaluations carried on the hydraulic and operational safety and the actions proposed to lower the risk are here presented, in the cases where significant hazard at the downstream valley or risk to the structure of the dam were considered to exist. Measures that are currently been taken, or that will be pursued in near future, are also discussed.