



# Dam safety performance and monitoring – best practice

## Project Summary SC900027/S

A large body of water impounded by a dam may pose a significant risk to its owners and those living downstream. Dam safety monitoring programmes are used to manage this risk in a cost-effective way. The Dam Safety Interest Group at the Centre for Energy Advancement through Technological Innovation (CEATI) has now published best practice guidelines for dam safety performance and monitoring. The guidelines are based on the experiences of people active in dam safety performance monitoring and on a review of recent publications.

The report outlines the requirements of a successful performance monitoring programme for new or existing dams. It indicates the responsibilities of everyone associated with the dam, highlights the need for timely evaluation and documentation of overall dam performance, and stresses the importance of good coordination and communication about the monitoring programme and its components between the owner, operators and dam safety engineers. The report provides a systematic approach to dam performance monitoring and maintenance and collates good practice examples of surveillance, inspection, instrumentation, analysis, management and interpretation.

The report also describes how dams fail and the value of incorporating potential failure mode analysis into a risk-based dam safety performance monitoring programme. This approach can provide dam owners with numerical estimates of the risk reduction provided by performance monitoring. The reasons for, and benefits of, dam safety performance monitoring are presented as a risk management tool.

The guidelines include the following recommendations.

- A dam safety programme should be developed based on the type of dam, its condition and its hazard potential. Performance monitoring should include visual inspection of the dam and its surroundings, combined with physical measurements .
- Ongoing maintenance and upgrading of performance monitoring systems are vital. Maintenance includes periodic calibration of instruments, cleaning, repair or replacement / updating when necessary.

- The dam owner or operator should identify one person with overall accountability for developing, maintaining and reviewing the dam safety performance monitoring programme.
- Performance monitoring must be carried out regularly by qualified professionals, whose training is kept up to date and who can interpret monitoring data.
- The dam owner should act promptly on all dam safety-related findings to reduce risk to as low as reasonably possible.

**Report:** SC900027/R

**Title:** Dam Safety Monitoring and Data Management – Best Practice

This project was funded by a collaboration of 21 organisations from around the world including the Environment Agency's Evidence Directorate. More information and copies of the full report can be obtained by contacting CEATI (details below) using project reference number '0210'.

**Internal Status:** Released to all regions

**External Status:** Restricted

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