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Book review

ICOLD Bulletin 138: General Approach to Dam Surveillance: Basic Elements in a 'Dam Safety' Process

ICOLD, Paris, France, 2009, ISSN 0534-8293, €65·00, 52 pp.

The aim of the bulletin is to act as an introduction to dam surveillance techniques and activities for owners, managers and other non-specialists. A second, more detailed bulletin entitled 'Surveillance Guide' will follow. The cover photograph is a startling example of enthusiasm overriding a safe approach!

1. General context

The high-hazard, low-likelihood nature of the risk posed by reservoirs and the importance of surveillance in managing the risk is outlined in this section. The importance of early observation of changes, which can prevent an incident becoming a failure, is highlighted. The section includes some useful flowcharts and also emphasises that although there is often a legal framework that underpins the duties, roles and responsibilities of the different parties involved with the reservoir, ultimately the owner has the main responsibility to the safety of the reservoir.

2. Surveillance: basic elements in a 'dam safety' process

This section briefly discusses the basic elements of a dam safety process including programming activities, surveillance, dam safety reviews, data management, maintenance and emergency planning.

3. Surveillance: a series of complementary activities with built in redundancy

Section 3 goes into greater detail on surveillance. The classification of dams and programming of surveillance activities is presented in the section before the one on the inspection of structures. This emphasises the need for the person undertaking routine surveillance to be intimately familiar with the dam and its behaviour. The different levels of inspection that are usually undertaken are outlined with the mention that in most cases, some form of qualification may be required to undertake the higher levels of inspections. Encouragingly, there is a prominence placed on visual inspection given that the bulletin is aimed at the non-expert who may feel that the instrumentation would give any warning that was required.

Part 3·4 briefly outlines monitoring before part 3·5 discusses flow control equipment assessment. It mentions the need for mechanical and electrical equipment to be tested and to ensure that there is reliable back up should there be power failure. When it came to discussing operating tests of flow control valves and performance monitoring of dams, we thought that the sections were possibly a little too vague for the non-expert reader to understand what was being referred to but this demonstrates the difficulty of producing a 'one-size-fits-all' guide. Perhaps adding pictures of elements of the dam and the appurtenant works would help.

4. Principles and rules

The section begins by setting questions that in their answers outline the basic requirements of the surveillance regime for a reservoir. After discussion around the surveillance routine, it talks about data acquisition and storage. In the final part of Section 4, there are some key points on the scope of the inspection needing to cover all of the reservoir and not just the dam; the need for competence and diligence in undertaking the surveillance, and an interesting paragraph debating quality against quantity of data and the danger of large quantities of data leading to blindness to early signs of problems.

5. Monitoring linked to metrology

The section presents the things to be considered when installing instruments and whether or not automated monitoring is likely to be useful for that installation. The document stresses the need to use simple, robust instruments that are easy to install, calibrate, maintain and operate, which is an excellent starting point when specifying instrumentation.

6. Conclusions

A one-size-fits-all approach will always have its limitations but the bulletin is a useful starting point for a non-expert dam owner and as such supervising engineers for small reservoir owners may wish to direct the owner to the bulletin for background reading. It can also serve as a prompt for the more expert of the reservoir community in refreshing their approach.

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