

Research Trends and Results

For Upgrade of Maintenance Technology Supporting Long Life of Dam

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1. Introduction

Dams have the functions of flood control, water utilization, etc. and constitute important social capital. Many dams have been constructed to date in Japan. The Ministry of Land, Infrastructure, Transport and Tourism ("MLIT") controls about 120 dams at present, and started management more than 50 years ago for about 10% of them and more than 30 years ago for about 50%.

2. Efforts for upgrading dam maintenance technology

Maintenance of these dams has been conducted by determining the matters concerning inspection and maintenance in accordance with the dam inspection and maintenance standards. Information of each dam on inspections, measurements, repairs, history, etc. have been accumulated by the individual dam manager but not been shared. In order to upgrade the dam maintenance technologies, it is required to create a database of the maintenance information accumulated separately in individual dams in an integrated form of electronic information for easier comparison and to propose methods for grasping aging trends and assessing soundness of dam civil structures.

Accordingly, the NILIM initiated the work to establish a dam maintenance database system in fiscal 2014 and started operation of the system in March 2015 to accumulate maintenance information for the dams under control of the MLIT.

In view of the importance of information managed by

this system, Internet is not used for network connection and much attention has been paid to ensure security including access control with ID and password and log recording. We designed the system by ensuring redundancy from the initial stage, and integrated the system in fiscal 2015 with the multipurpose dam management annual report database, in which dam water quality and hydrological data are registered. We also organized data on the conditions of aging according to the variation of structures of the dams registered in the dam maintenance database by associating the conditions of component, deterioration, repair, component replacement, etc. for each dam.

3. Future Plan

We are going to promote registration of maintenance results by dam managers and improve the convenience of the system. Further, through comparative study and trend analysis on the maintenance data collected, we will continue to clarify the aging characteristics and consider proposal for soundness assessment method for dam civil structures.

