

Technical Support of NILIM in Comprehensive Inspection of Dams in Long-term Operation

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1. Comprehensive Dam Inspection

Dams support safety as well as civic life and economic activities along the basin and require regular careful maintenance so that they certainly perform their functions. Accordingly, maintenance of dam facilities has been implemented in combination of (i) patrols and inspections in daily management activities (condition check by visual inspection, routine inspection with measurement of various data, extraordinary inspection after an earthquake, etc.), (ii) periodic inspection by experts other than the administrator (in principle every 3 years), and (iii) Comprehensive Dam Inspection.

Comprehensive Dam Inspection¹⁾ was instituted in 2013 for the dams under the control of the MLIT that have passed more than 30 years from completion due mainly to the increase in dams in long-term service, most of which were constructed in the period of rapid economic growth, and to the difficulty in overall renewal requiring necessarily suspension of the functions of dam facilities.

In Comprehensive Dam Inspection, various information is analyzed including the survey and design materials used for dam construction, records on construction and test filling of reservoir, inspection record and measurement data to date, and various types of analyses and tests with sampling are conducted to examine in detail the condition of the dam and its long-term change, and thereby evaluate the soundness of the dam. The results of Comprehensive Dam Inspection are reflected in future maintenance policy in consideration of the required management level according to the importance of the inspected parts.



Photo 1: Implementation of Comprehensive Dam Inspection

(Check the condition of concrete and structure joints in the inspection gallery inside the dam body)

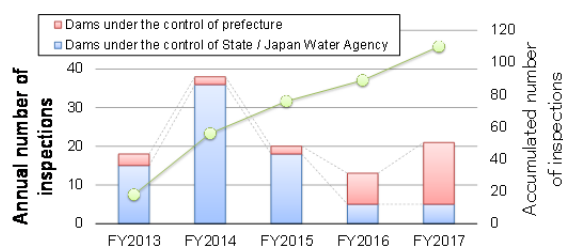


Figure 1: The number of cases of technical support for Comprehensive Dam Inspection

2. Technical support by NILIM

As a part of the technical support for dam projects by NILIM in cooperation with the Public Works Research Institute, NILIM participates in Comprehensive Dam Inspection upon request of the dam administrator (Photo 1) and gives advice from expert / objective position on reasonable inspection planning, evaluation of soundness diagnosis results, establishment of maintenance policy, etc. (Figure 1). Such advice includes (i) detection of long-term changes in the dam structures, which are hard to notice in daily management, from various information including various measurement data and site check results and determination of the causes of changes and impact on the functions / safety of the dam or proposal of additional investigation methods necessary for such determination, and (ii) indication of matters requiring particular focus / attention in future maintenance activities as well as matters to be improved and proposal of methods for specifically reflecting such indication in the site maintenance policy.

Through the participation in the Comprehensive Dam Inspections conducted so far, we have deeply recognized the importance of the viewpoint of future maintenance through exchange of frank opinions based on the sharing with site personnel etc. of various information accumulated to date through design concepts, construction, and test filling of reservoir in individual dams, as well as the present condition of each dam. In the future, we expect that Comprehensive Dam Inspection would be helpful in making an order-made sustaining maintenance policy for further long-term operation of dams.

☞ See the following for details.

- 1) MLIT, Water and Disaster Management Bureau, River Environment Division: Comprehensive Dam Inspection Manual and Commentary (*in Japanese*)

http://www.mlit.go.jp/river/shishin_guideline/