



**US Army Corps
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Engineer Research and
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Fact Sheet

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REMR MANAGEMENT SYSTEM FOR LOCK AND DAM OPERATING EQUIPMENT

The Problem

Many existing civil works structures are nearing the end of their design life, yet service to the public must be maintained. Those responsible for maintenance and repair (M&R) of these structures need a comprehensive decision support tool to assist them with project prioritization and efficient allocation of scarce funds. This project addressed equipment used to operate lock, valve, and dam structures, which include assemblies such as: exposed gear assemblies, enclosed gear assemblies, gear rack assemblies, rocker arm assemblies, chain assemblies, hydraulic cylinder assemblies, and coupling assemblies. Not included into this evaluation of operating equipment are hydraulic motors, pumps, hoses, or valves, limit switches, brakes, electric wiring, and electric motors.

The Technology

To assist managers with M&R planning and budgeting, the U.S. Army Construction Engineering Research Laboratory (CERL) developed a Repair, Evaluation, Maintenance, and Rehabilitation (REMR) system. This computerized management system contains standardized inspection and condition rating procedures. It also includes software for handling and storing data, performing required calculations, and producing a variety of reports for work planning and budgeting purposes.

The management system features a 100-point Condition Index (CI) that rates the equipment on physical condition and the extent to which it is performing its intended function (see CERL Fact Sheet CF-22, The Condition Index). This is primarily a planning tool with the index values serving as an indicator of the general condition level of the equipment. The index is meant to focus management attention on the equipment most likely to warrant immediate repair or further evaluation. In addition, the CI values can be used to monitor changes in general condition over time and can serve as an approximate comparison of the conditions of different structures.

Application of this management system begins with an inspection of the equipment according to the standard procedure established for each. Inspection information is entered into the system to compute the CI directly from the inspection records. Several distresses reduce the CI according to at least two considerations: (1) serviceability, or how the equipment performs its function on a day-to-day basis, and (2) subjective safety, or how, in the judgment of expert engineers, the safety of the equipment has been degraded by various distresses.

Benefits/Savings

This computerized REMR Management System provides procedures for performing condition surveys, consistent and quantitative condition assessment, and data base management. Combined with economic analyses, these procedures allow efficient M&R budget planning through the evaluation of current conditions. The ultimate goal is to achieve the best possible condition for lock and dam operating equipment at any funding level.

The collection of consistent, uniform condition assessment data will allow the generation of typical curves reflecting rates of deterioration. The combination of historical condition data and expert opinion should allow prediction of changes in the CI based on maintenance history, operating conditions, and applied M&R policies.

Status

A Technical Report, REMR-OM-119 ("*REMR Management Systems - Navigation Structures, Condition Rating Procedures for Lock and Dam Operating Equipment*," Stecker, J., Greimann, L., Mellema, S., Rens, K., Foltz, S., U.S. Army Corps of Engineers, March 1997), has been published to document the procedures used. Software for operating equipment will be completed for some components in FY97 and for the remaining in FY98. The most current REMR software is available on the Internet at <http://owww.cecer.army.mil/fl/remr/remr.html>

Point of Contact

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