

July 18, 2007

Federal Emergency Management Agency
Attn: Ms. Rita Henry
500 C Street, SW., Room 416
Washington, D.C. 20472

Dear Ms. Henry:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to a letter, dated June 11, 2007, to Chairman Dale E. Klein. The letter asked the NRC to provide information for the biennial report on the implementation status of the "Federal Guidelines for Dam Safety" (FGDS). Our report, which discusses the progress on implementation of the FGDS from October 2005 through September 2007 for fiscal year (FY) 2006 and FY 2007, is enclosed.

During this period, the NRC continued to use the technical assistance of the Federal Energy Regulatory Commission (FERC), to help with dam safety inspections at NRC-licensed facilities. This cooperative effort is the result of the Interagency Memorandum of Agreement signed in September 1992. By the end of this biennial period, FERC personnel will have completed inspections at seven NRC-licensed facilities. The seven facilities are safety-related dams at nuclear-powered electric generating facilities.

Since there was no negative feedback on the NRC 2004–2005 Progress Report, no action items required response. However, the NRC has continued with an aggressive dam inspection program.

In the upcoming biennial period, we will inform the Federal Emergency Management Agency of further progress in the implementation of the FGDS through the quarterly meetings of the Interagency Committee on Dam Safety. Mr. George A. Wilson, Branch Chief of the Electrical Engineering Branch, Division of Engineering, Office of Nuclear Reactor Regulation, is the NRC's Dam Safety Officer.

I trust this letter and enclosure fully respond to your request.

Sincerely,

/RA/

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Enclosure: Fifteenth Biennial Report

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THE U.S. NUCLEAR REGULATORY COMMISSION
2006–2007 PROGRESS REPORT
TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY
IMPLEMENTATION OF THE FEDERAL GUIDELINES FOR DAM SAFETY

Fifteenth Progress Report
Reporting Period—October 2005 through September 2007

I. INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC or the Commission) was created as an independent Federal agency, authorized to regulate and license nuclear facilities and the use of nuclear materials and to conduct research in support of licensing and the regulatory process. The Commission does not plan, design, construct, nor operate such facilities, nor does it control the land on which the facilities are constructed. The legal authority for the Commission, in the realm of dam safety, derives from the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended; and the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA). With respect to dams, the NRC has regulatory authority over (1) uranium mill tailings dams, (2) storage-water-pond dams at in-situ leach mining facilities, and (3) those dams integral to the operation of licensed facilities, or the possession and use of licensed material, that pose a radiological safety-related hazard should they fail. Exceptions to dams in the third category are (a) dams that are submerged in other impoundments (e.g., to provide an ultimate heat sink) and, therefore, do not pose flooding threats, or (b) dams that are regulated by other Federal agencies (e.g., Army Corps of Engineers, Federal Energy Regulatory Commission (FERC), Tennessee Valley Authority). No changes in dam safety responsibilities have occurred during this reporting period.

II. PROGRESS ON IMPLEMENTATION OF THE FEDERAL GUIDELINES FOR DAM SAFETY

A. Organization, Administration, and Staffing

The NRC organization for the administration of the Dam Safety Program has changed since the last reporting period. The management for the program has been relocated from the Office of Nuclear Material Safety and Safeguards to the Division of Engineering (DE), in the Office of Nuclear Reactor Regulation (NRR). The program is implemented through an organization focused on the NRC Dam Safety Officer (DSO). None of the personnel associated with the program are employed full time with the effort. The lead staff members involved in the implementation of the Dam Safety Program report to the NRC DSO, who is currently the Electrical Engineering Branch Chief, in the DE. The DSO responds directly to the NRR Director, who in turn responds to the NRC Executive Director for Operations (EDO). The EDO responds directly to the NRC Chairman.

Enclosure

The DSO is the Chairman of the Dam Safety Advisory Group (DSAG), which provides coordination among the various NRC offices. DSAG provides for the consolidation of the interdisciplinary technical resources from within the NRC, necessary for an effective program. The DSAG members coordinate the implementation of the Dam Safety Program within each NRC office.

The NRC has found that the organizational structure is fully adequate and capable of implementing the existing Dam Safety Program. Since the completion of the initial round of dam safety inspections in 1998, the NRC has found that the allocated total of 0.2 full-time equivalent (FTE) and associated contractual dollars have been sufficient to address the Dam Safety Program.

The procedural guidance for implementing the Dam Safety Program is described in (1) the Commission paper, "Status Report on Implementation of Dam Safety Program Plan," SECY-91-193 (dated June 25, 1991), (2) the Dam Safety Program Plan (issued July 1991), and (3) the Charter of the Dam Safety Officer (issued October 1990).

The previous report identified no deficiencies in the NRC's program implementation plan and, thus no specific actions were required.

B. Dam Safety Training Activities

The NRC as a Federal agency has not sponsored in-house dam safety-related training during the reporting period. The Commission has supported such training through the Interagency Committee on Dam Safety (ICODS) and has had NRC staff participate in that training. The NRC relies on technical assistance from FERC to perform dam safety inspections at NRC-regulated facilities and requires those personnel to be adequately trained.

Personnel involved in the support of the Dam Safety Program continue to have direct access to the series of training manuals titled, "Training Aids for Dam Safety." In addition, all personnel are also knowledgeable about current relevant literature and the state-of-the-art practices in dam safety.

C. Dam Inventories

The NRC continues to verify the inventory of all dams for which the Commission has regulatory authority by providing information necessary to complete the basic fields in the National Inventory of Dams (NID) database. Presently, the NRC uses existing hard-copy records and an electronic database within the Commission to generate the input necessary for the NID. The NRC also utilizes actual dam inspections to verify the data related to the status of the dam and the hazard classification to define the associated risks.

No new dams, meaning new dams being designed, constructed, and put into operation, have come under the NRC's regulatory jurisdiction during this reporting period. Any new dams that come under NRC regulatory jurisdiction will be added to the dam inventory and the information provided to NID during a subsequent update.

Land-use changes downstream of dams are some of the important items included in NRC dam inspections. This is because of the initial hazard classifications that were made based on information existing at the time the NRC licensed a facility with a dam. To date, no revisions to hazard classifications have been necessary as a result of land-use changes.

D. Independent Reviews

Since the NRC is a regulatory agency, it is not an owner of dams and, consequently, any NRC reviews of an NRC-licensed facility are independent. During this period, the NRC continued to use the technical assistance of FERC, to help with dam safety inspections at NRC-licensed facilities. This cooperative effort is the result of the Interagency Memorandum of Agreement signed in September 1992. By the end of this biennial period, FERC personnel will have completed inspections at seven NRC-licensed facilities. The seven facilities are safety-related dams at nuclear-powered electric generating facilities. During the current reporting period, no design or construction activities were underway for dams that are or would be under the NRC's regulatory authority and Dam Safety Program.

As noted previously, review activities are carried out with the technical assistance of FERC personnel working for, and in conjunction with, NRC staff during the inspection process. From the standpoint of the owner (the NRC licensee), these are considered to be independent reviews. To date, the NRC has not used external consultants in the Dam Safety Program, except the interagency technical support from FERC as previously noted.

E. Inspection Programs

Seven dam safety inspections were conducted at NRC-licensed facilities during this reporting period. The seven inspections were at nuclear-powered electric generating facilities. FERC conducted the inspections, and NRC personnel have reviewed or will review the reports under the technical assistance agreement between the two Federal agencies. The NRC has had no problems with these inspections related to the quality, experience, and training of the inspection teams' staff.

The inspection teams identified no unsafe dams or improper classifications during this reporting period. With regard to responses and actions after the inspections, the NRC sends the final report and a list of actions to be completed, along with a schedule, to the appropriate NRC licensee for action. This process has been effective in obtaining corrective action on the identified items.

F. Dam Safety Rehabilitation Programs

No regulated dams within the NRC's Dam Safety Program were involved in rehabilitation programs during this reporting period, and none are scheduled.

G. Management Effectiveness Reviews

Because of the low level of resources needed by the NRC to support this program and the fact that all dams under the NRC's purview are considered low-hazard structures (i.e., the potential for loss of life or property damage downstream of a dam from floodwaters released as a result of dam failure would be small (i.e., no lives lost and minimal economic loss)), neither internal management nor the Government Accountability Office have performed any management effectiveness reviews.

H. Dam Failures and Remedial Actions

No failures or incidents have occurred during this reporting period.

I. Emergency Action Planning

As previously noted, all dams under the NRC's purview are considered low-hazard structures. It is unlikely that the hazard status of these structures will be elevated. For these reasons, the NRC does not have an emergency action planning program for dam safety. Since the NRC Dam Safety Program Plan must provide for high- or significant-hazard structures, if any are included in a future inventory, the NRC has arranged with FERC for technical assistance with Emergency Action Plans (EAPs), should the need arise. The NRC Dam Safety Program Plan states that all radiologically safety-related dams or mill tailings dams under NRC jurisdiction, and classified as high- or significant-hazard dams, shall have EAPs that conform to Federal Guidelines for Dam Safety (FGDS). At this time, we do not foresee the need to write EAPs for any of the structures within our program.

If it becomes necessary to write an EAP in the future, the NRC intends to allow NRC licensees to use elements of the existing radiological EAPs associated with the facility. Thus, the basic organization, methodology, and interfaces with State and local governments already exist and will aid in the development of any necessary additional elements for dam safety EAPs.

J. Application of ICODS Technical Guidance

Emergency Action Planning Guidelines for Dams

Because of the low-hazard nature of all structures in the program, the NRC currently has no plans to adopt these guidelines but will consider them if an EAP must be developed for dam safety.

Federal Guidelines for Earthquake Analyses and Design of Dams

The NRC's criteria for seismic design of safety-related structures at nuclear power reactor sites, which include dams involving radiological safety, are incorporated in NUREG-0800, the NRC Standard Review Plan (SRP), Sections 2.5 and 3.7, and in Regulatory Guide 1.127, "Inspection of Water-Control Structures Associated with Nuclear Power Plants," issued March 1978. Regulatory Guide 3.11.1, "Operational Inspection and Surveillance of Embankment Retention Systems for Uranium Mill Tailings," Revision 1, issued October 1980, also addresses seismic issues and implements the seismic siting requirements for impoundments in Criterion 4(e) of Appendix A, "Criteria Relating to the Operation of Uranium Mills and the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material from Ores Processed by the Extraction or Concentration of Source Material from Ores Processed Primarily for Their Source Material Content," to Title 10, Part 40, "Domestic Licensing of Source Material," of the *Code of Federal Regulations* (10 CFR Part 40). These criteria and guidelines are comprehensive and should produce safe seismic designs. The NRC staff has concluded that these guidance documents are consistent with or meet the intent of the Federal guidelines.

Selecting and Accommodating Inflow Design Floods for Dams

The NRC's criteria for selecting and accommodating the design flow are embodied in Section 2.4 of the SRP for nuclear power reactor sites and the "Standard Review Plan for

UMTRCA Title I Mill Tailings Remedial Action Plans,” for inactive tailings embankments (dams). These criteria are quite conservative and are consistent with the Federal guidelines. Regulatory Guide 3.11 also addresses upstream catchment requirements of Criterion 4(a) of Appendix A to 10 CFR Part 40 for UMTRCA Title II sites and is equivalent to the Federal guidelines. Further, Regulatory Guide 1.59, “Design Basis Floods for Nuclear Power Plants,” considers flood conditions that could be caused by dam failures from earthquakes.

Hazard Potential Classification System for Dams

As previously mentioned, all dams within the NRC’s program are considered low-hazard structures, based on hydraulics and remoteness of the sites. For this reason, there has been no action required to address reclassification of the structures. Should the overall Hazard Classification System be redefined to include factors other than hydraulics and potential loss of life from structural failure, then each structure will be reviewed to determine if a change in hazard classification is warranted.

K. State Dam Safety Agency Involvement

The NRC maintains a liaison with the dam safety agencies in various States to avoid duplications in efforts and inventory data. Since all dams associated with a nuclear power plant are not necessarily radiologically safety-related, the NRC and the States coordinate to ascertain that no dams are excluded from the NID. At this time, the NRC has no direct relationship with the various States in the area of training or the performance of inspections.

L. Research and Development and Special Initiatives

During this period, the NRC instituted no new initiatives, research, technology transfers, or special studies. The agency focused its efforts on the necessary basics of inspection for the Dam Safety Program.

M. Public Concerns

No dams under the NRC’s jurisdiction for regulatory control have been the subject of public concern. NRC procedures for licensing facilities that could include the construction of any new dams require that the licensing actions be in the public view, with provisions for public participation. If the public wished to participate in issues regarding the operation of an NRC-regulated dam, it would need to petition for involvement.

III. IMPACT ON AGENCY OPERATIONS

The implementation of FGDS has necessitated the specific identification of the Dam Safety Program for internal budget purposes. This has, in turn, required a deliberate decision process of weighing various risks in other programs for which the NRC is directly responsible against the risks associated with dam safety. The NRC is unique in that the focus of its main regulatory responsibility, namely nuclear materials and their applications, has the potential for significant impact on a large population if safety is compromised, similar to what might be expected from the failure of a very large high-hazard dam. Consequently, when the NRC considers risk and cost benefits, the agency has a good understanding of the implications of changing the level of resources devoted to one or another safety program. The NRC believes that adequate resources have been directed to ensuring the safety of existing dams through inspection.

Funding for the Dam Safety Program for fiscal year (FY) 2006 and FY 2007 reflected a separate commitment to the Dam Safety Program for a dedicated 0.2 FTE and \$34,000 of technical assistance funding. The contract funding is solely for technical assistance from FERC in program implementation. In FY 2008, the program will function at a similar activity level. This level of effort has been found satisfactory since the completion of the initial round of safety inspections.

IV. ADDITIONAL OBSERVATIONS

The NRC continues to implement dam safety actions under the NRC Dam Safety Program Plan. The plan describes the manner in which the NRC will implement the FGDS. Because of the small number of dams under the NRC's purview, a programmatic decision was made to emphasize the performance of dam safety inspections. Trained and experienced FERC personnel conducted inspections using the NRC's standard operational inspection procedures. The inspections identified no significant safety issues.

The NRC updates its guidance regarding the documentation of the design record, construction record, reservoir filling and surveillance records, operation and maintenance records, and the permanent files, as necessary. The elements of hazard evaluation, downstream effects, and warning systems have been reviewed and evaluated with respect to the NRC program. NRC guidance has been reviewed and evaluated for conformance to FGDS for (1) operating responsibility and procedures, (2) maintenance procedures, (3) the periodic inspection program, (4) deficiency correction and documentation, (5) emergency action planning, and (6) elements on the scope and completion of internal and external reviews.

All dams under the NRC's purview are on an inspection cycle of 2 to 3 years, as advised by FERC. Further, the hazard classification has been reconfirmed as "low" for all structures; thus, preparation of EAPs is not required. The NRC has, however, arranged to receive technical assistance from FERC if the need to prepare EAPs develops.