

From: Johnny Eads
To: Jacob Zimmerman; Jonathan Rowley
Date: 4/10/2006 9:29:00 AM
Subject: 1999 LR Guidance on Dams

Attached is the staff's LR guidance issued in 1999 related to aging management of dams. As you can see it was limited to dams as structures and did not address electrical and mechanical components in scope at dams.

Jake, I forwarded the information from the Oconee SER to VY for their use. It describes detailed AMRs for dam components and requires aging management programs for each electrical and mechanical subsystems and components with valid aging effects.

Johnny

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Subject: 1999 LR Guidance on Dams
Creation Date 4/10/2006 9:28:55 AM
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1999 LR Guidance Dam Structures .pdf		366182	4/10/2006 9:21:18
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May 5, 1999

Mr. Douglas J. Walter
 Nuclear Energy Institute
 1776 I Street, NW., Suite 400
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SUBJECT: LICENSE RENEWAL ISSUE NO. 98-0100, "CREDITING FERC-REQUIRED INSPECTION AND MAINTENANCE PROGRAMS FOR DAM AGING MANAGEMENT"

Dear Mr. Walters:

Enclosed is the staff's evaluation and proposed resolution for the subject issue. The staff plans to implement the recommended resolution as part of the next revision to the draft Regulatory Guide entitled "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses." We also expect NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," to include the necessary changes to reflect the enclosed guidance. Accordingly, if there are any industry comments on the evaluation basis or the proposed resolution, we request that you provide those comments to us in writing within 30 days following your receipt of this letter, to ensure a timely resolution of this issue. If you have any questions regarding this matter, please contact Samson Lee at 301-415-3109.

Sincerely,

Original Signed By

Christopher I. Grimes, Chief
 License Renewal & Standardization Branch
 Division of Regulatory Improvement Programs
 Office of Nuclear Reactor Regulation

Project No. 690

Enclosure: As Stated
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NUCLEAR ENERGY INSTITUTE
(License Renewal Steering Committee)

Project No. 690

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**LICENSE RENEWAL ISSUE NO. 98-0100
CREDITING FERC-REQUIRED INSPECTION
AND MAINTENANCE PROGRAMS FOR
DAM AGING MANAGEMENT**

1. Introduction

The issue arose as to what type of program could be credited as a dam aging management program for the purposes of license renewal. Industry has asked whether simply citing an inspection program performed to meet Federal Energy Regulatory Commission (FERC) or other regulatory agency requirements would be adequate to demonstrate that dams will be maintained in accordance with the Current Licensing Basis (CLB) and therefore satisfy the requirements under Title 10 of the Code of Federal Regulations (10 CFR), Section 54.21.

2. Background

As a part of the Integrated Plant Assessment performed for the license renewal application of the Oconee Nuclear Station, Duke Energy Corporation identified earthen embankments, dams, and related structures as being subject to Aging Management Review (AMR). They also identified a series of potential aging effects for those structures and claimed existing inspection programs, either the FERC required Five-Year Inspection or the Duke Power Five-Year Underwater Inspection of Hydroelectric Dams and Appurtenances, manage those effects. The application stated that a regular program of inspections, coupled with planned corrective actions, to be implemented should any deficiencies be discovered, should be adequate to safely maintain a dam and its appurtenances indefinitely.

Many dams on nuclear sites are already subject to periodic inspection due to the Federal Dam Safety Program which was initiated in 1977. This program, developed in response to several fatal dam failures in the 1970's, encourages strict safety standards in the practices and procedures employed by Federal agencies or by dam owners regulated by Federal agencies with regard to dam design, construction, inspection, maintenance, and management. The NRC relies on FERC to perform safety inspections of dams for which the NRC is responsible under this Federal dam safety program.

3. Discussion

Dam Aging Management

The requirements for an application for license renewal for a nuclear power plant are specified in 10 CFR Part 54, specifically, Section 54.21(a)(3):

For each structure and component identified...[in the Integrated Plant Assessment in the application, the applicant must] demonstrate that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation.

Enclosure

-2-

Since dam aging effects are related to material loss, damage, or movement due to erosion, corrosion, settlement, leakage, internal stresses, and other sources, a visual inspection of the external surfaces of a dam above and below water lines should detect any significant aging effects. Once detected, corrective actions can generally be taken to rectify the problem and minimize further degradation. Continued regular inspections coupled with a maintenance/corrective action program would be expected to keep a dam functioning safely during the period of extended operation associated with license renewal.

To that end, the continuation of a proper inspection program into the period of license extension should be adequate for dam aging management. What constitutes a proper inspection program and the crediting of programs under regulatory jurisdiction are discussed below.

Aging Management Programs For Dams Under FERC Oversight

In May of 1997, the NRC staff issued a Commission paper (SECY-97-110) discussing the status of development of its own Dam Safety Program Plan for dams that fall under NRC jurisdiction. Currently, only 19 of the dozens of dams and related structures associated with, or located near, nuclear power or uranium mine facilities are under NRC purview. In this paper, the NRC stated it had undertaken activities to fully implement a formal dam safety program plan in compliance with the Federal Guidelines on Dam Safety.

Under this program, independent reviews, at various stages in the life cycle of an NRC jurisdictional dam are required. As stated in the Plan:

By nature, the concept of the owner performing the major functions of, and addressing the elements of, a dam-safety program, with regulatory agency overview, will meet the goal of the Federal Guidelines. For existing dams, the Federal Guidelines prescribe formal inspections at intervals not to exceed five years. For this program, owners will have to have such reviews and inspections conducted by a team of qualified individuals, with a majority of the members being independent of the owner's organization.

The Plan also says:

The inspection criteria, frequency, and scope of the inspections shall, as a minimum, meet the Federal Guidelines. The frequency and scope of the inspections will be the resultant of those inspections conducted by the dam owners, combined with those of NRC, as the regulatory agency and those conducted by a State, if conducted under an acceptable dam-safety program. Recognition of State dam-safety programs as the regulatory control will only be made after a formal Memorandum of Understanding (MOU) has been executed between a specific State and NRC.

-3-

In SECY-97-110, the NRC staff describes an agreement established between the NRC and FERC that provides for FERC assistance in inspecting dams under NRC jurisdiction. The dam safety strategy set forth in SECY-97-110 applies only to those 19 dams and structures under the jurisdiction of the NRC, and not to the many dams associated with nuclear power plants under the purview of other agencies. However, this NRC dam policy does recognize the expertise of FERC in the dam safety, inspection, and maintenance field.

In addition, as stated before, inspections, coupled with a maintenance/corrective action program, are an acceptable manner of managing degradation of dams. Therefore, for earthen embankments, dams, and related structures identified as being subject to AMR, the staff concludes that continued compliance with the requirements of FERC into the license renewal period, by virtue of that agency's authority and responsibility for ensuring that its regulated projects are constructed, operated, and maintained to protect life, health, and property, will constitute an acceptable dam aging management program for the purposes of license renewal.

In order to credit the inspection programs performed under FERC oversight, and to provide the demonstration required by §54.21(a)(3), a license renewal applicant should indicate that its dam is under FERC jurisdiction and that its inspection and maintenance program is in conformance with FERC requirements.

Aging Management Programs For Dams Under Other Regulatory Agencies

In addition to FERC, there are several possible government entities (Federal, state, local) that may have regulatory authority over dams and government entity-approved private firms that may perform inspections. SECY-97-110 and the Dam Safety Program Plan generally conclude that programs under the direct supervision of FERC are assumed to be acceptable while programs implemented by other agencies (including the utility itself, a state regulatory agency, etc.) must be demonstrated to meet particular requirements.

The Army Corps of Engineers, by virtue of its extensive experience in the field of dam construction, maintenance, inspection, and regulation, is also recognized as expert in the field of dam safety. Inspection and maintenance programs under the purview of the Army Corps of Engineers, continued into the period of license renewal, would constitute an acceptable dam aging management program. Therefore, a license renewal application can similarly credit an inspection program under the Army Corps of Engineers to satisfy the demonstration required by §54.21(a)(3), by stating that the Corps has jurisdiction over the dam, and that the applicant's program is in conformance with Corps requirements.

While dams, embankment, and appurtenance inspection and maintenance programs that fall under a regulatory agency other than FERC or the Corps, may be comparably acceptable, they are not as well recognized, understood and documented. Therefore, these programs need to be described in the application and evaluated like the general (non-regulatory) aging management programs described below.

-4-

Not all dams at nuclear power plants fall under the jurisdiction of a regulatory or independent entity. Many dam inspection and maintenance programs administered by licensees are modeled after Federal agency programs, but are completely controlled and administered by the licensee.

Programs that are not conducted under the direct supervision of FERC or the Army Corps of Engineers will be evaluated for the attributes of effective aging management in accordance with the guidelines developed for implementing the license renewal review.

Specifically, the staff will review these programs in accordance with §54.21(a)(3) to determine whether they contain the essential elements needed to provide adequate aging management for dams. The dam programs and procedures will be evaluated against the following elements: (1) scope of program; (2) preventive actions; (3) monitoring, detecting, and trending; (4) acceptance criteria; and (5) administrative controls. Applicants will be expected to provide an appropriate program description to address these attributes. Inspection and maintenance programs similar to those under the jurisdiction of FERC or the Army Corps of Engineers are likely to satisfy the elements.

4. Resolution

It is the staff's opinion that dam inspection and maintenance programs under the jurisdiction of FERC or the Army Corps of Engineers, continued through the period of the license renewal, will be adequate for the purpose of aging management. For programs not falling under the regulatory jurisdiction of FERC or the Army Corps of Engineers, the staff will evaluate the effectiveness of the aging management program based on comparability to the common practices of the FERC and Corps programs.

In addition, the applicant must include a description of its dam inspection program in its Final Safety Analysis Report supplement pursuant to §54.21(d), if it does not already exist.

The staff recommends that NEI 95-10 be revised to reflect this guidance, and the staff will include comparable guidance in the appropriate draft Standard Review Plan section.