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Oconee Flood Protection and the Jocassee Dam Hazard

DHS Briefing
September 19, 2008

10/4/2012

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Overview

- **Objective**
 - Provide background information for issue
 - Provide status and path forward
- **Success**
 - Understanding of the regulatory and safety issues
 - Understanding of NRC planned actions
 - Identify any NRC/DHS issues that need further action

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Oconee Nuclear Station

- Three pressurized water reactors located in Seneca, South Carolina
 - Owned and operated by Duke Energy Corporation
 - Operational in 1973-74
 - Located down river of lake Keowee (just north of site) and lake Jocassee (11 miles upriver)
- Only nuclear plant in the United States that relies on hydro-electric generators as emergency power source (Keowee Hydro Station)
- Plant relies on the Standby Shutdown Facility (SSF) to maintain reactor shutdown in case of fires, floods, or sabotage events.
 - SSF contains its own electric power source (diesel generators, batteries, etc.), control room.
 - SSF is a retrofit to the original plant design.

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The Flood Scenario Rupture of Jocassee Dam

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Jocassee Dam Aerial



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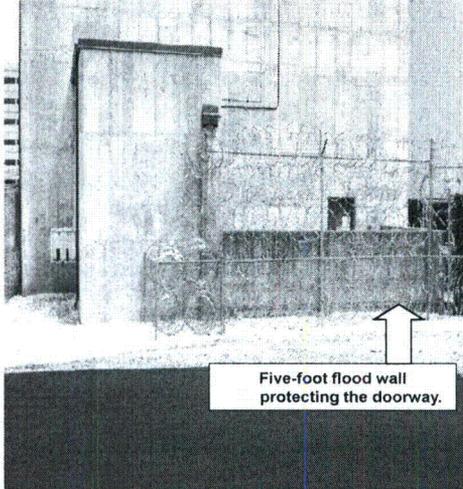
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The SSF Flood Barriers



Five-foot flood wall protecting the doorway.

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Key Insights from Reactor Oversight Process

- In 2007, NRC concluded that the Jocassee dam failure issue had not been adequately resolved.
- Duke Hydro/FERC Inundation Study completed in early 1990s. Estimated flood heights up to 16.8 ft above SSF grade level.
- Floods in excess of 5 ft lead to three-unit core damage event and ultimate failure of each containment building.
- Staff identified an under-estimate in licensee's dam failure frequency.

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Issuance 50.54(f) Letter

- On August 15, 2008, NRC issued letter to licensee requiring information to determine if NRC should modify, suspend, or revoke the license.
- Letter seeks information to assure protection of public and elevates NRC's regulatory and safety concerns.
- Letter states that Jocassee Dam Failure Inundation Study indicates flood heights up to 16.8 feet above SSF grade.
- Licensee to respond to NRC by September 29, 2008.

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Actions Concurrent with 50.54(f) Letter

- Backfit evaluation: external flooding within licensing basis. Licensee did not address Jocassee dam failure.
- "Adequate Protection" based backfit best approach.
 - No defense-in-depth: three unit core damage event with ultimate failure of each containment.
 - Regulatory expectations for external flood protection includes dam hazards.
- Cost-benefit estimate of \$3 million in modifications. Modifications on the order of \$13 million justified.

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Actions Concurrent with 50.54(f) Letter (continued)

- In early September 2008, NRC staff notified Congressional staffers regarding the issue.
- NRC anticipates interaction with Congressional staffers on the issue and NRC resolution.
- Generic issue preliminary assessment completed.
 - Twenty five sites have a dependency on dam performance. Seven sites (including Oconee) have dams up river of the site.
 - Draft Information Notice has been written.

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NRC/DHS Interface

- NRC staff is providing this information to DHS should it affect the ranking of the Jocassee Dam from a security oversight standpoint.
- NRC has not determined how or if security issues may affect the NRC's regulatory actions.
- Are there any additional actions that DHS could take, if necessary, to further protect the dam?

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