INSPECTION PLAN

Inspection of: Oconee

Inspection Dates: 6/7 – 6//11

Report Number: 2010-006

Type of Inspection: Confirm external flood ICMs

Planned Inspection Hours: 120

Inspector(s): Curt Rapp (Lead)
Walt Rogers, RII SRA
Kamishan Martin

Inspection Objectives: Verify ICMs have been implemented and will provide reasonable assurance they will be effective in mitigating the effects of Jocassee dam failure.

Past Plant Performance in This Inspection Area: NA

Risk-informed Inspection: (NEED ANY INSIGHTS FROM NRR OR WALT)

Projects Branch Chief/Senior Resident Perspective: NA

Allegation Awareness:

Outstanding Items to Be Reviewed: External flood ICMs

Lodging During Inspection: Curt Rapp – Hilton Garden Inn Anderson, SC

In Charge of Exit Interview: Curt Rapp

Date Projects Informed: NA

Date Plan Provided to Projects: NA

Date Licensee Informed: Licensee Contact: Bob Meixelle

Branch Chief's Instructions:

Approving Branch Chief:_____ Date:

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Oconee ICM Inspection Matrix

ICM	Assigned Inspector	Inspectable Area	Inspection Tasks	IPs	Estimated Hours	
					In-Office Prep	On-Site Inspection
Dam Safety Inspections						
Bi-weekly dam walkdown 2" or > rainfall Daily dam observation	Curt Curt Curt	Procedures Responsibilities Corrective Actions	Interview operators to assess their understanding of responsibilities and event response Review procedures for acceptance criteria and required actions Verify corrective actions	7111121, 93801, 42001, 71152	3	5
Annual FERC Report 5 yr independent	Kamishan Kamishan	Corrective Actions	Review reports for any adverse trends or observations. Verify corrective actions	71152	4	4
Instrumentation/Monitoring						
Monthly observation wells and seepage collection monitoring	Walt	Procedures Corrective Actions Responsibilities	Review procedures for acceptance criteria and actions if exceeded. Review monitoring logs and process for indication of adverse trend. Verify corrective actions for either condition. Review procedures for actions and criteria. Interview staff to verify understanding of actions consistent with procedures.	7111121, 93801, 71152	4	6
Inspection of monitoring wells and seepage collection after "felt" seismic event	Walt				1	2
Annual surface monument survey	Walt	Corrective Actions	Review reports for any movement. Verify corrective actions	71152	2	3
On-site control room staff Hydro central ops center	Kamishan Curt	Responsibilities Procedures	Review procedures to assess required actions. Interview staff to assess their understanding of responsibilities and verify consistent with procedures.	7111121, 93801, 42001	2	3
Forebay camera feed to control room Staff gauge camera Fixed staff gauge camera fed to control room and Hydro central	Kamishan Kamishan	Procedures Responsibilities	Interview staff to assess their use of these cameras for event response. Review procedures to verify cameras included in response actions	7111121, 93801, 42001	2	7
Forebay and tail race instrumentation monitored by control room and Hydro central Seismographs around reservoir	Curt Walt	Procedures Calibration Corrective Actions	Check calibration of instruments and verify alarm setpoints consistent with assumed response. Review response procedures. Verify corrective actions for any deficiencies.	7111121, 93801, 42001. 71152		

	Emergency Procedures/Plan					
Dam and ONS flooding response procedures	Walt	Procedures Calibration Corrective Actions Responsibilities Training	Review procedures for actions and criteria. Interview staff to verify understanding of actions consistent with procedures. Verify corrective actions for any deficiencies. Review lesson plans and simulator training.	42001, 71152, 93801	3	4
Emergency Action Plan	Kamishan	Emergency Plan Procedures Training Responsibilities	Review emergency plan. Review procedures for actions and criteria. Interview staff to verify understanding of actions consistent with procedures. Review lesson plans and emergency drills.	7111140 3, 7111140 6, 82001,	3	8
Call tree notification to ONS	Kamishan					
Call tree notification to off-site organizations	Kamishan					
ONS EP implementation	Kamishan					
OSAG and ERO direction	Kamishan					
Recovery actions to restore electrical after flood water recede (~10 hours)	Curt					
Keowee FD respond to site	Curt					
EM 5.3 for flood > 803.5'	Curt	Procedures Responsibilities Corrective Actions	Review procedures for actions and criteria. Verify actions can be accomplished within the required time. Review corrective actions for any deficiencies. Verify actions consistent with B5b plan.	TI-171	3	4
- Staging of B.5.b pump						
- Shutdown of ONS units w/i 1 hour						
Containments (fail > 59 hrs after dam break)	Curt					
B.5.b Strategies	Curt					

1) Is there a procedure or policy that describes what actions would be taken, and when?
2) If a storm of exceptional magnitude were predicted to move into the watershed of Jocassee and Keowee reservoirs, what actions would be taken by Duke? Here also, is there a procedure or policy that describes what actions would be taken, and when?

Verify ICM Mitigation Capability

Dam Safety Inspections

Bi-weekly dam walkdown; 2" or > rainfall; Daily dam observation

- Review procedures for acceptance criteria and required actions (IP 7111121 02.02 c.)
- Review procedures controlling reservoir water level for actions if one or more turbines or gates are inoperable prior to a rainfall event.

Annual FERC Report; 5 yr independent inspection

- Review reports for any adverse trends or observations

Monthly observation wells and seepage collection monitoring; Inspection of monitoring wells and seepage collection after "felt" seismic event

- Review procedures for acceptance criteria and required actions
- Review monitoring logs and process for indication of adverse trend

Annual surface monument survey

- Review reports for any movement

Instrumentation/Monitoring

On-site control room staff; Hydro central ops center

- Review procedures to assess required actions

Forebay camera feed to control room; Staff gauge camera; Fixed staff gauge camera fed to control room and Hydro central

- Review procedures to verify cameras included in response actions
- Review comp measures for inoperable cameras and feed

Forebay and tail race instrumentation monitored by control room and Hydro central; Seismographs around reservoir

- Verify alarm setpoints consistent with assumed response.
- Review response procedures
- Review comp measures for inoperable instrumentation and indications

Emergency Procedures/Plan

Dam and ONS flooding response procedures

- Review procedures for actions and criteria
- Review lesson plans and simulator training

Emergency Plan

- Review emergency plan and implementing procedures for actions and criteria.
- Review training lesson plans and emergency drills.
- Review recovery actions to restore electrical after flood water recede (~10 hours)
- Verify procedures to have Keowee fire department respond

EM 5.3 for flood > 803.5'; Containments (fail > 59 hrs after dam break); B.5.b Strategies

- Review procedures for actions and criteria
- Verify actions can be accomplished within the required time
- Verify actions consistent with B5b plan
  - Staging of B.5.b pump
  - Shutdown of ONS units w/i 1 hour
- Review of the calculations for the B.5.B pumps' capability to provide sufficient water for heat removal

Verify ICM Implementation

Dam Safety Inspections

Bi-weekly dam walkdown; 2" or > rainfall; Daily dam observation

- Interview operators to assess their understanding of responsibilities and event response
- Verify corrective actions (IP 71152)
- Review training records or drill critiques
- Actions taken if anomalous piping discharges on the abutments were to be discovered

Annual FERC Report; 5 yr independent dam inspection

- Verify corrective actions for any deficiencies

Monthly observation wells and seepage collection monitoring; Inspection of monitoring wells and seepage collection after "felt" seismic event

- Verify corrective actions for adverse trends

Annual surface monument survey

- Verify corrective actions for any movement

Instrumentation/Monitoring

On-site control room staff; Hydro central ops center

- Interview staff to assess their understanding of responsibilities and verify consistent with procedures
- Review any training records or drill results
- Verify corrective actions for any deficiencies
- Procedures for equipment condition monitoring of ammeters and voltmeters installed on spillway gates
- Address whether these gages will allow for remote monitoring of spillway operation
- Methods to remotely confirm operation of the spillway gates
- Third means of operating the spillway gates implemented in April 2010

Forebay camera feed to control room; Staff gauge camera; Fixed staff gauge camera fed to control room and hydro central

- Interview staff to assess their use of these cameras for event response.
- Verify operability of cameras and dedicated feed to hydro central.
- Verify corrective actions for any deficiencies.
- Review corrective action system for reliability or availability trends.
- Verify comp measures implemented for inoperable cameras or indications.

Forebay and tail race instrumentation monitored by control room and Hydro central; Seismographs around reservoir

- Check calibration of instruments.
- Verify corrective actions for any deficiencies.
- Verify operability of indications in control room and hydro central.
- Review corrective action system for reliability or availability trends.
- Verify comp measures implemented for inoperable instrumentation.

Emergency Procedures/E-Plan

Dam and ONS flooding response procedures

- Interview staff to verify understanding of actions is consistent with procedures.
- Verify corrective actions for any deficiencies.
- Verify procedures are up-to-date and readily accessible.
- Conduct simulator drill to verify procedure adequacy and operator response.

Emergency Plan

- Interview staff to verify understanding of actions consistent with procedures.
- Review corrective actions for deficiencies or weaknesses identified during emergency drills

EM 5.3 for flood > 803.5'; Containment failure > 59 hrs after dam break; B.5.b Strategies

- Review corrective actions for any deficiencies.

Documents for ICM inspection

Procedures

- BI-weekly dam walkdown
- Dam inspection for 2" or > rainfall
- Observation well monitoring
- Response of Jocassee control room, Keowee control room, Hydro Central Ops personnel, and ONS control room for high level, overtopping, dam failure
- Response for forebay and tailrace alarms
- Calibration of forebay and tail race instruments
- Response for "felt" seismic event
- Interface agreements with off-site organizations (fire department, police, etc.)
- Staging of B5b pump, shutdown of ONS units
- B5b response plan
- E-plan related to dam failure/flooding
- Contingency plans for containment failure

Documents

- Annual FERC reports (pervious 2 yrs)
- 5 yr independent inspections (most recent and previous and any associated PIPs
- Monthly observation well records for past year and any associated PIPs
- Annual monument survey results for past three years and any associated PIPs
- PIPs associated with Jocassee forebay and trailrace instruments or alarms
- E-drill results for dam break/flooding and any associated PIPs
- Training lesson plans for responding to dam failure/flooding