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GNRO-2017/00039

June 30, 2017

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
11555 Rockville Pike  
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SUBJECT: Steam Dryer Visual Inspection Results for the First Two Scheduled  
Refueling Outages  
Grand Gulf Nuclear Station – Unit 1  
Docket Nos. 50-416  
License Nos. NPF-29

REFERENCES:

1. Entergy letter to NRC, *License Amendment Request, Extended Power Uprate, dated September 8, 2010 (GNRO-2010/00056, Accession Number ML102660403)*
2. NRC Letter to Entergy Operations, Inc., *Grand Gulf Nuclear Station, Unit 1 – Request for Additional Information Regarding Extended Power Uprate Application License Amendment Request (TAC NO. ME4679) dated March 2, 2011 (Accession Number ML110550475)*
3. Entergy letter to NRC, [Response to] *Request for Additional Information Regarding Extended Power Uprate, Grand Gulf Nuclear Station, Unit 1, dated March 30, 2011 (GNRO-2011/00018) (ML110900275)*
4. NRC Letter to Entergy Operations, Inc., *Grand Gulf Nuclear Station, Unit 1 – Issuance of Amendment RE: Extended Power Uprate, dated July 18, 2012 (TAC NO. ME4679) (ML121210020)*
5. *BWRVIP-139-A BWR Vessel and Internals Project, Steam Dryer Inspection and Flaw Evaluation Guidelines, 1018794, July 2009*

Dear Sir or Madam:

Grand Gulf Nuclear Station (GGNS) conducted visual inspections of all accessible locations of the steam dryer in accordance with the BWRVIP-139-A, Steam Dryer Inspection and Flaw Evaluation Guidelines, and General Electric's (GE) inspection guidelines. Attached are the summary results of the visual inspections conducted in the first two refueling outages (RF19; 2014 and RF20; 2016) after reaching full Extended Power Uprate (EPU) conditions. This letter is being submitted in accordance with Operating License No. NPF-29, Condition 2.C(46)(f).

This letter contains no new Regulatory Commitments.

Should you have any questions concerning the content of this letter, please contact James Nadeau at 601-437-2103.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 30, 2017.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric A. Larson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Eric A. Larson  
Site Vice President  
Grand Gulf Nuclear Station

EAL/sas

Attachment: Grand Gulf Nuclear Station Steam Dryer Visual Inspection Results for the First Two Scheduled Refueling Outages after Reaching Full EPU Conditions

cc: see next page

cc: U.S. Nuclear Regulatory Commission  
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NRC Senior Resident Inspector  
Grand Gulf Nuclear Station  
Port Gibson, MS 39150

Attachment to GNRO-2017/00039  
Grand Gulf Nuclear Station Steam Dryer Visual Inspection Results for the First Two Scheduled  
Refueling Outages after Reaching Full EPU Conditions

Introduction

As required by the staff's Safety Evaluation (SE) for Amendment 191 to the Facility Operating License No. NPF-29 for the Grand Gulf Nuclear Station, Unit 1 dated July 18, 2012, Grand Gulf conducted visual inspections of all accessible locations of the steam dryer in accordance with the BWRVIP-139-A, Steam Dryer Inspection and Flaw Evaluation Guidelines, and General Electric's inspection guidelines. These inspections were conducted during the first two scheduled refueling outages (RF19; 2014 and RF20; 2016) after reaching full Extended Power Uprate (EPU) conditions. Grand Gulf's proposed long term steam dryer inspections plan will be submitted in a separate report.

In total over 500 inspections were recorded on the steam dryer outer diameter, and over 350 inspections were recorded on the steam dryer inner diameter. The inspection method used for the steam dryer inspections were VT-3 and VT-1. The VT-1 inspections were performed using the VT-1-1/32 method which is a VT-1 quality examination that visually resolves a 1/32" black line on an 18% neutral gray card as required by BWRVIP-139-A.

RF19 (2014) Inspection Results

The first scheduled refueling outage after reaching full EPU conditions was RF19. During this refueling outage, the first set of baseline inspections on the replacement steam dryer was conducted. No relevant indications were observed on any of the steam dryer inner diameter inspection locations in RF19. Relevant indications on steam dryer outer diameter inspection locations are listed below in Table 1. Re-inspections of the indications were scheduled for and completed in RF20 to confirm no significant changes occurred.

<b>Component Name</b>	<b>Component Description</b>	<b>Inspection Type</b>	<b>Results</b>	<b>Corrective Actions and Re-Inspection</b>
SDOD BC TRB 01	Bank C Azimuth 0° Tie Rod Bolting	VT-1-1/32	Abnormal discoloration on the bottom weld and bolt head	Trend. Indication due to construction damage on the washer and subsequent crud buildup on the damaged washer  Re-inspect in RF20
SDOD LG 000	0° Azimuth Lower Guide Surfaces	VT-1-1/32	Witness/rub marks were observed on the inner surfaces	Trend. No evidence of metal slivers or rolled metal  Indications consistent with steam dryer installation and/or removal from the vessel  Re-inspect in RF20

SDOD SSB 120	120° Azimuth Seismic Support Block	VT-1-1/32	Wear observed on the lead in surfaces	<p>Seismic Support Block polished to remove the metal slivers.</p> <p>Indications consistent with handling marks during steam dryer installation and/or removal from the vessel.</p> <p>Re-inspect in RF20</p>
SDOD SSB 185	185° Azimuth Seismic Support Block	VT-1-1/32	Wear observed on the lead in surfaces	<p>Seismic Support Block polished to remove the metal slivers.</p> <p>Indications consistent with handling marks during steam dryer installation and/or removal from the vessel.</p> <p>Re-inspect in RF20</p>
SDOD SSB 240	240° Azimuth Seismic Support Block	VT-1-1/32	Wear and gouges observed on the lead in surfaces	<p>Seismic Support Block polished to remove the metal slivers.</p> <p>Indications consistent with handling marks during steam dryer installation and/or removal from the vessel.</p> <p>Re-inspect in RF20</p>

RF20 (2016) Inspection Results

The second scheduled refueling outage after reaching full EPU conditions was RF20. During this refueling outage, the second and final set of baseline inspections on the replacement steam dryer was conducted. No relevant indications were observed on any of the steam dryer inner diameter inspection locations in RF20. Two new relevant indications were observed on steam dryer outer diameter inspection locations. These indications are listed below in Table 2.

**Table 2: RF20 Relevant Indications**

<b>Component</b>	<b>Component Description</b>	<b>Inspection Type</b>	<b>Results</b>	<b>Corrective Actions and Re-inspection</b>
SDOD SSB 240	240° Azimuth Seismic Support Block	VT-1-1/32	New wear observed on the lead in surfaces (this wear is in a different location on the lead in surface than the previously identified indication)	Seismic Support Block polished to remove the metal slivers.  Indications consistent with handling marks during steam dryer installation and/or removal from the vessel.  Re-inspection scheduled for RF21
SDOD SSB 300	300° Azimuth Seismic Support Block	VT-1-1/32	Wear observed on the lead in surfaces	Seismic Support Block polished to remove the metal slivers.  Indications consistent with handling marks during steam dryer installation and/or removal from the vessel.  Re-inspection scheduled for RF21

Re-Inspection of Previously Identified Indications

All relevant indications observed in RF19 were re-inspected in RF20 to identify any changes. The re-inspection results are shown below in Table 3. In summary, the indication on SDOD SSB 120 showed additional wear on the lead in surfaces, and all other indications showed no discernable changes. All indications are scheduled for re-inspection in RF21 to confirm no significant changes have occurred. Relevant indications will continue to be inspected each refueling outage until the indication is shown to have stabilized. This is typically established with two subsequent re-inspections with no changes noted after the indication is initially identified. Once an indication is shown to have stabilized, inspections will continue at the regularly scheduled frequency.

**Table 3: RF20 Re-Inspection of Previously Identified Indications**

<b>Component</b>	<b>Component Description</b>	<b>Inspection Type</b>	<b>Results</b>	<b>Corrective Actions and Re-inspection</b>
SDOD BC TRB 01	Bank C Azimuth 0° Tie Rod Bolting	VT-1-1/32	No discernable changes noted	Trend  Re-inspection scheduled for RF21
SDOD LG 000	0° Azimuth Lower Guide Surfaces	VT-1-1/32	No discernable changes noted	Trend  Re-inspection scheduled for RF21
SDOD SSB 120	120° Azimuth Seismic Support Block	VT-1-1/32	Additional wear observed on the lead in surfaces	Seismic Support Block polished to remove the metal slivers.  Indications consistent with handling marks during steam dryer installation and/or removal from the vessel.  Re-inspection scheduled for RF21
SDOD SSB 185	185° Azimuth Seismic Support Block	VT-1-1/32	No discernable changes noted	Trend  Re-inspection scheduled for RF21
SDOD SSB 240	240° Azimuth Seismic Support Block	VT-1-1/32	No discernable changes noted on the original location.  Additional wear observed on the lead in surfaces as noted in Table 2.	Trend  Re-inspection scheduled for RF21



### Conclusion

A complete baseline inspection of the Gran Gulf replacement steam dryer was performed during the two subsequent refueling outages (RF19 and RF20) following full EPU conditions. The baseline inspections were consistent with the guidance provided in BWRVIP-139-A, Steam Dryer Inspection and Flaw Evaluation Guidelines, and General Electric's inspection guidelines. Based on engineering evaluation, it was concluded that none of the steam dryer indications identified in RF19 or RF20 challenge the structural integrity or function of the steam dryer. This completes the required baseline inspections and report of results for the replacement steam dryer. Grand Gulf's proposed long term steam dryer inspection plan will be submitted in a separate report.

### References

1. Grand Gulf Nuclear Station, Unit 1- Issuance of Amendment RE: Extended Power Uprate (TAC No. ME4679), Nuclear Regulatory Correspondence ML121210020, July 18, 2012.
2. BWRVIP-139-A BWR Vessel and Internals Project, Steam Dryer Inspection and Flaw Evaluation Guidelines, 1018794, July 2009.
3. BWRVIP-03 BWR Vessel and Internals Project, Reactor Pressure Vessel and Internals Examination Guidelines, TR-105696-R19, December 2016.
4. General Electric Service Information Letter (SIL) 644, "BWR Steam Dryer Integrity."
5. Grand Gulf Nuclear Station Recommendations for Future Inspection- Replacement Steam Dryer, General Electric Report 0000-0125-6316-R1, December 2013.
6. In Vessel Visual Inspection (IVVI) of Grand Gulf Nuclear Station during the Spring 2014 Outage (GGNS RF19), GEH-7480-316097-JB1-IVVI, February 2014.
7. In Vessel Visual Inspection (IVVI) of Grand Gulf Nuclear Station during the Spring 2016 Outage (GGNS RF20), GEH-7480-318931-JB1-IVVI, February 2016.