



Kevin P. Riley
Nuclear Support Services Manager
Harris Nuclear Plant
5413 Shearon Harris Rd
New Hill, NC 27562-9300

984.229.2124

10 CFR 50.4

April 8, 2020
Serial: RA-20-0082

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Shearon Harris Nuclear Power Plant, Unit 1
Docket No. 50-400/Renewed License No. NPF-63

Subject: 180-Day Steam Generator Tube Inspection Report

Ladies and Gentlemen:

In accordance with the Technical Specifications (TS) of Shearon Harris Nuclear Power Plant, Unit 1 (HNP), Duke Energy Progress, LLC, submits the attached 180-Day Steam Generator Inspection Report for HNP. This report has been prepared in accordance with TS 6.9.1.7, "Steam Generator Tube Inspection Report," and provides the complete results of HNP Refueling Outage No. 22.

This letter contains no new regulatory commitments.

Please address any questions regarding this matter to Dennis Earp at 984-229-2673.

Sincerely,

A handwritten signature in black ink that reads 'K P Riley'.

Kevin P. Riley

Enclosure: 180-Day Steam Generator Tube Inspection Report

cc: J. Zeiler, NRC Sr. Resident Inspector, HNP
T. Hood, NRC Project Manager, HNP
L. Dudes, NRC Regional Administrator, Region II



Kevin P. Riley
Nuclear Support Services Manager
Harris Nuclear Plant
5413 Shearon Harris Rd
New Hill, NC 27562-9300

984.229.2124

10 CFR 50.4

April 8, 2020
Serial: RA-20-0082

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Shearon Harris Nuclear Power Plant, Unit 1
Docket No. 50-400/Renewed License No. NPF-63

Subject: 180-Day Steam Generator Tube Inspection Report

Ladies and Gentlemen:

In accordance with the Technical Specifications (TS) of Shearon Harris Nuclear Power Plant, Unit 1 (HNP), Duke Energy Progress, LLC, submits the attached 180-Day Steam Generator Inspection Report for HNP. This report has been prepared in accordance with TS 6.9.1.7, "Steam Generator Tube Inspection Report," and provides the complete results of HNP Refueling Outage No. 22.

This letter contains no new regulatory commitments.

Please address any questions regarding this matter to Dennis Earp at 984-229-2673.

Sincerely,

Kevin P. Riley

Enclosure: 180-Day Steam Generator Tube Inspection Report

cc: J. Zeiler, NRC Sr. Resident Inspector, HNP
T. Hood, NRC Project Manager, HNP
L. Dudes, NRC Regional Administrator, Region II

U.S. Nuclear Regulatory Commission
HNP-20-0082
Enclosure

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO. 1
DOCKET NO. 50-400/RENEWED LICENSE NO. NPF-63

Enclosure

180-Day Steam Generator Tube Inspection Report
(6 pages including cover)

Harris Nuclear Plant HNP1 RFO122 Steam Generator Tube Inspection Report

Pursuant to Harris Technical Specification 6.9.1.7 the following information is provided:

a. The scope of inspections performed on each SG

For all three steam generators: Full length bobbin probe inspections of all tubes. Top of the tubesheet array probe inspections around the periphery extending five tubes into the bundle. Array probe special interest locations including 80 tubes in each steam generator both legs at top of tubesheet to flow distribution baffle for the chemistry excursion.

b. Degradation mechanisms found

Degradation found included tube support plate (TSP) wear.

c. Non-destructive examination techniques utilized for each degradation mechanism

The Non-destructive examination techniques utilized bobbin coil and array probes for the detection of wear. The array probe was utilized to characterize wear indications.

d. Location, orientation (if linear), and measured sizes (if available) of service induced indications

The complete listing for service-induced indications is attached.

Tubes with tube support plate wear

SG 1A - 4 tubes/6 indications

SG 1B - 4 tubes/4 indication

SG 1C - 4 tubes/4 indication

Total - 12 tubes/14 indications

No other indications of wear were reported

e. Number of tubes plugged during the inspection outage for each active degradation mechanism

No tubes were plugged.

f. The total number and percentage of tubes plugged to date

<i>Steam Generator*</i>	<i>1A</i>	<i>1B</i>	<i>1C</i>	<i>Total</i>
<i>Plugs present prior to RFO122</i>	<i>5</i>	<i>4</i>	<i>3</i>	<i>12</i>
<i>Plugs added in RFO122</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Total Plugs</i>	<i>5</i>	<i>4</i>	<i>3</i>	<i>12</i>
<i>% Plugged</i>	<i>0.08</i>	<i>0.06</i>	<i>0.05</i>	<i>0.06</i>

** There are 6307 tubes per generator.*

g. The results of condition monitoring, including the results of tube pulls and in-situ pressure testing.

The cumulative EFPY for RFO119 was 12.22, RFO120 was 13.61, RFO121 was 15.0 and RFO122 was 16.39.

As of RFO122, the Harris Unit 1 steam generators had operated 15.11 EFPY since the first in-service inspection after replacement. In total, the Harris Unit 1 steam generators had operated 16.39 EFPY since replacement.

Condition monitoring was met for the tube to support plate degradation. All structural performance criteria were met with more than adequate margin projected through the next planned inspection at RFO125. The tube to support plate degradation could operate 14.5 EFPY before the structural and leakage criterion would be violated.

No degradation was detected in the plug visual or bowl cladding inspections.

No in-situ tests or tube pulls were performed.

FOSAR was performed at the top of tubesheet in all three steam generators. Three foreign objects were found in SG 1A. Two were legacy parts that were re-confirmed to be in their previously observed locations. The other part was a small piece of stellite material that was removed from the steam generator. One object was found in SG 1B. This part is acceptable for another three cycles of operation based on a wear evaluation. No metallic objects were found in SG 1C. The steam generators could operate no more than five cycles (7.5 effective full power years) between inspections for foreign objects and associated wear.

Sludge lancing was performed in all three steam generators. A total of fifty-eight (58) pounds of sludge were removed from all three steam generators. Thirteen (13) pounds of sludge was removed from the SG 1A. Ten (10) pounds of sludge was removed from SG 1B. Thirty-five (35) pounds of sludge was removed from SG 1C.

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX	UTIL3
3	12	.27	136	PCT	12	P5	06C	.32		WAR					09H	TEC	.560	ZBAHS	37	C	7	
3	30	.22	116	PCT	10	P5	07C	.42		WAR					09H	TEC	.560	ZBAHS	37	C	6	
107	78	.40	148	PCT	17	P5	07C	.36		WAR					09C	TEC	.560	ZBAHS	37	C	8	
58	131	.40	98	PCT	17	P5	05C	-.50		WAR					09C	TEC	.560	ZBAHS	37	C	9	
58	131	.31	140	PCT	14	P5	05C	.38		WAR					09C	TEC	.560	ZBAHS	37	C	9	
58	131	.30	110	PCT	14	P5	04C	.40		WAR					09C	TEC	.560	ZBAHS	37	C	9	

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX	UTIL3
2	1	.30	142	PCT	21	P5	06C	.35		WAR					09C	TEC	.560	ZBAUC	21	C	10	
1	58	.12	131	PCT	11	P5	04C	.41		WAR					09C	TEC	.560	ZBAUC	21	C	12	
58	131	.25	112	PCT	15	P5	05C	.47		WAR					TEC	TEH	.560	ZBAHS	21	H	10	
49	134	.19	87	PCT	12	P5	05C	.49		WAR					TEC	TEH	.560	ZBAHS	21	H	11	

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX	UTIL3
2	1	.27	94	PCT	13	P5	04C	.34		WAR					09C	TEC	.560	ZBAHS	31	C	7	
1	86	.32	143	PCT	15	P5	05C	.00		WAR					09C	TEC	.560	ZBAHS	31	C	8	
6	107	.20	120	PCT	10	P5	06C	.38		WAR					09C	TEC	.560	ZBAHS	31	C	9	
1	138	.33	132	PCT	18	P5	08H	.35		WAR					09H	TEH	.560	ZBAHS	20	H	7	