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York, SC 29745-9635

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July 18, 2006

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Subject: Duke Power Company LLC d/b/a Duke Energy  
Carolinas, LLC (Duke)  
Catawba Nuclear Station, Unit 2  
Docket Number 50-414  
Steam Generator Outage Summary Inservice  
Inspection Report for End of Cycle 14  
Refueling Outage

Please find attached the subject report which provides the results of the steam generator tube inservice inspection effort associated with the subject outage.

There are no regulatory commitments contained in this letter or its attachment.

If you have any questions concerning this material, please call L.J. Rudy at (803) 831-3084.

Very truly yours,

D.M. Jamil

LJR/s

Attachment

A047

Document Control Desk  
Page 2  
July 18, 2006

xc (with attachment):

W.D. Travers, Regional Administrator  
U.S. Nuclear Regulatory Commission, Region II  
Atlanta Federal Center  
61 Forsyth St., SW, Suite 23T85  
Atlanta, GA 30303

E.F. Guthrie, Senior Resident Inspector  
U.S. Nuclear Regulatory Commission  
Catawba Nuclear Station

J.F. Stang, Jr., Senior Project Manager (addressee only)  
U.S. Nuclear Regulatory Commission  
Mail Stop 8-H4A  
Washington, D.C. 20555-0001

# *Steam Generator Outage Summary Report*

## *Catawba Unit 2 2006 Outage EOC 14*

Location: 4800 Concord Road, York South Carolina 29745

NRC Docket No. 50-414

National Board No. 173

Commercial Service Date: August 19, 1986

Owner: Duke Energy Corporation  
526 South Church St.  
Charlotte, N.C. 28201-1006

Revision 0

Prepared By: *C. B. Cauthe* Date: *7-13-2006*

Reviewed By: *D. B. Mayo* Date: *7/13/2006*

Approved By: *P. W. Downing* Date: *7/13/06*

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Hartford Steam Boiler  
Inspection and Insurance  
Co. (AIA)

Electronic

Steam Generator  
Desktop

**FORM NIS-1 OWNER'S DATA REPORT FOR INSERVICE INSPECTIONS**

**As required by the Provisions of the ASME Code Rules**

1. Owner: Duke Energy Corporation, 526 S. Church St., Charlotte, NC 28201-1006  
(Name and Address of Owner)
2. Plant: Catawba Nuclear Station, 4800 Concord Road, York, S. C. 29745  
(Name and Address of Plant)
3. Plant Unit: 2
4. Owner Certificate of Authorization (if required)      N/A
5. Commercial Service Date: August 19, 1986
6. National Board Number for Unit 173
7. Components Inspected:

<u>Component</u>	<u>Manufacturer</u>	<u>Manufacturer Serial No.</u>	<u>State or Province No.</u>	<u>National Board No.</u>
Steam Generator 2A	Westinghouse	1923	N/A	4
Steam Generator 2B	Westinghouse	1922	N/A	3
Steam Generator 2C	Westinghouse	1921	N/A	2
Steam Generator 2D	Westinghouse	1924	N/A	5

Note: Supplemental sheets in form of lists, sketches, or drawings may be used provided (1) size is 8<sup>1</sup>/<sub>2</sub> in. x 11 in., (2) information in items 1 through 6 on this data report is included on each sheet, and (3) each sheet is numbered and the number of sheets is recorded at the top of this form.

**FORM NIS-1 (Back)**

- 8. Examination Dates 10/24/2004 to 04/24/2006
- 9. Inspection Period Identification: #3
- 10. Inspection Interval Identification: #2
- 11. Applicable Edition of Section XI 1989 Addenda None
- 12. Date/Revision of Inspection Plan: Per Technical Specification (5.5.9)
- 13. Abstract of Examinations and Test. Include a list of examinations and tests and a statement concerning status of work required for the Inspection Plan.
- 14. Abstract of Results of Examination and Tests.
- 15. Abstract of Corrective Measures.

We certify that a) the statements made in this report are correct b) the examinations and tests meet the Inspection Plan as required by the ASME Code, Section XI, and c) corrective measures taken conform to the rules of the ASME Code, Section XI.

Certificate of Authorization No. (if applicable) NA Expiration Date NA

Date July 13 20 06 Signed Duke Energy Corp. By P.W. Downing  
Owner

**CERTIFICATE OF INSERVICE INSPECTION**

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State of Province of NC employed by \*The Hartford Steam Boiler Inspection and Insurance Company of Connecticut have inspected the components described in this Owners' Report during the period 03/27/2006 to 07/13/2006, and state that to the best of my knowledge and belief, the Owner has performed examinations and tests and taken corrective measures described in the Owners' Report in accordance with the Inspection Plan and as required by the ASME Code, Section XI.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the examinations, test, and corrective measures described in this Owners' Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection

Robert McGill Commissions NC 978  
 Inspector's Signature National Board, State, Province, and Endorsements

Date 7-13 20 06

\* The Hartford Steam Boiler Inspection & Insurance Company of Connecticut (HSB C'I)  
 200 Ashford Center North  
 Suite 205  
 Atlanta, GA. 30338

## **Steam Generator Tubes Inspected Catawba Unit 2 EOC14**

**The following describes the scope of the Inspection performed at Catawba Unit 2 for EOC-14 in March 2006:**

A bobbin coil eddy current inspection was performed at Catawba Unit 2 EOC-14 in March 2006. The tubes selected for the bobbin inspection included tubes with previous indications, tubes on the periphery of the bundle two rows deep, tubes surrounding plugged tubes and a minimum sample of 20 % of remaining tubes including all tubes not inspected with bobbin since EOC -10. During the outage additional tubes were added to the inspection plan to bound possible loose parts identified by eddy current and visual inspection. The total tubes inspected by bobbin per steam generator can be found in Table 1.

The tubesheet region was inspected with the array probe. The tubes selected for the inspection included a 20 % random sample, all periphery tubes, all of the historical overexpansions and 20 % of the newly identified overexpansions. Relative to the latter, there was a new criterion developed to more consistently identify overexpansions. The tubesheet inspection was performed from two inches above the top of tubesheet through the tube end. The total number of tubes inspected by the array probe in the tubesheet region per steam generator can be found in Table 1.

Small radius u bends were also inspected by the array. The tubes selected include a 20 % sample of rows one, two and ten. The tubes selected by the bobbin plan in row 3 and 4 were also inspected with the array. Row ten is the first row that was not stressed relieved after bending and was sampled for monitoring purposes. The total number of tubes inspected by the array in the u-bends per steam generator can be found in Table 1.

Bobbin coil indications of special interest were also inspected by the array probe. The indication selected for array special interest were degradation identified during the inspection (I-codes, PLP, and permeability variations), 50% of previously identified dents greater than two volts, new dents and new wear. The number of tubes inspected for special interest per steam generator can be found in Table 1.

Preheater expansions were also inspected by the array probe. The tubes selected for the inspection include 20 % the tubes expanded at the 17C and 18C tube support plate. The total number of tubes inspected by the array in this region per steam generator can be found in Table 1.

Tubes were inspected at baffle 18 C by the array probe. This region acts as a loose parts collector since it is at the bottom of the preheater. The total number of tubes

inspected by the array probe in this region per steam generator can be found in Table 1.

Rolled plugs were inspected with a rotating coil probe on the hot leg. Twenty percent of the rolled plugs installed on the hot leg were inspected. The total number of tubes with rolled plug examinations per steam generator can be found in Table 1.

All plugs were inspected visually on both the hot and cold leg sides. The total number of plugged tubes visually inspected per steam generator can be found in Table 1.

There are 4578 tubes in each steam generator.

**Table 1**  
**Tubes Inspected by Steam Generator**  
**By Inspection Plan**

<b>Scope</b>	<b>SG A</b>	<b>SG B</b>	<b>SG C</b>	<b>SG D</b>
Bobbin	2508	2499	2376	2601
Tubesheet (array)	1508	1159	1091	1265
Small radius u bends (array)	186	204	177	197
Preheater expansions at 17 C and 18C (array)	28	28	28	28
18 C baffle region (array)	97	134	190	130
Special Interest of bobbin (array)	560	359	362	521
Plug (rpc)	11	7	7	8
Plug (visual)	68	90	53	85



**Catawba Nuclear Station  
Steam Generator Tubes Plugged  
Refueling Outage EOC14, April 2006**

**Steam Generator 2A Tubes Plugged = 1**

<b>Tube Row</b>	<b>Tube Column</b>	<b>Repair Method</b>	<b>Reason for plugging</b>
17	82	Cold leg stabilized & mech plugged	Preventative measure for an over-roll condition at top of tubesheet.

**Steam Generator 2B Tubes Plugged = 9**

<b>Tube Row</b>	<b>Tube Column</b>	<b>Repair Method</b>	<b>Reason for plugging</b>
15	27	Mech plugged & Hot leg stabilized	Loose Part, 1st TSP
15	29	Mech plugged & Hot leg stabilized	Loose Part, 1st TSP
16	27	Mech plugged & Hot leg stabilized	Loose Part, 1st TSP
16	28	Mech plugged & Hot leg stabilized	Loose Part, 1st TSP
16	30	Mech plugged & Hot leg stabilized	Loose Part, 1st TSP
16	31	Mech plugged & Hot leg stabilized	Loose Part, 1st TSP
17	27	Mech plugged & Hot leg stabilized	Loose Part, 1st TSP
18	28	Mech plugged & Hot leg stabilized	Loose Part, 1st TSP
30	12	Mech plugged & Cold Leg tube Hard Rolled	Cold Leg tube not expanded.

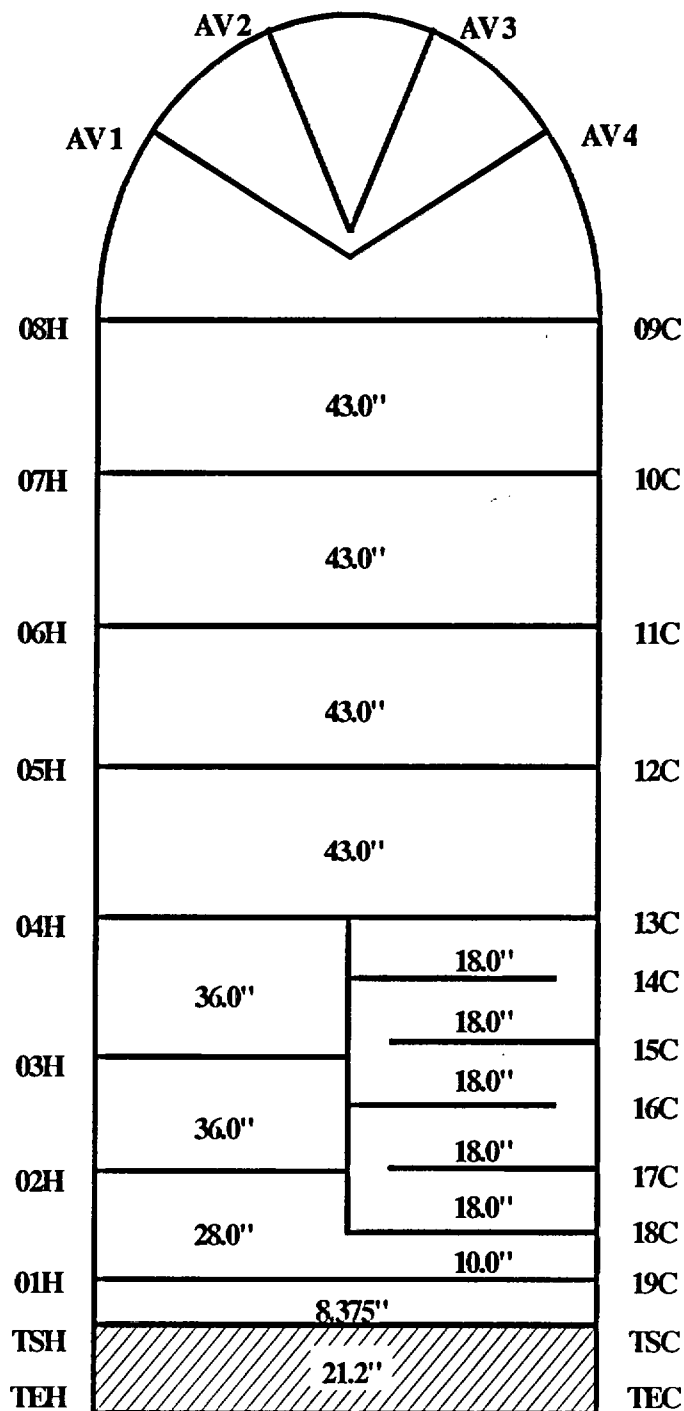
**Steam Generator 2C Tubes Plugged = 2**

<b>Tube Row</b>	<b>Tube Column</b>	<b>Repair Method</b>	<b>Reason for plugging</b>
7	109	Mech plugged & hot leg stabilized	Loose Part, 4th TSP
11	93	Mech plugged & Cold leg stabilized	Preventative measure for an over-roll condition at top of tubesheet

**Steam Generator 2D Tubes Plugged = 2**

<b>Tube Row</b>	<b>Tube Column</b>	<b>Repair Method</b>	<b>Reason for plugging</b>
1	57	Mech plugged & hot leg stabilized	Preventative measure for tube expansion geometry at top of tubesheet.
41	60	Mech plugged & Cold leg stabilized	Preventative measure for an over-roll condition at top of tubesheet

Landmark Sketch to assist in locating eddy current information.



**D5 STEAM GENERATOR SPECIFICATIONS**

**TUBE INFORMATION:**

NO. OF TUBES = 4578  
 MATERIAL = Inconel 600  
 NOMINAL DIA. = 0.750"  
 NOMINAL WALL = 0.043"  
 ROW 1 RADIUS = 2.250"  
 STRAIGHT LENGTH = 305.0"  
 TUBE PITCH = 1.0625"

**TUBE SUPPORT INFORMATION:**

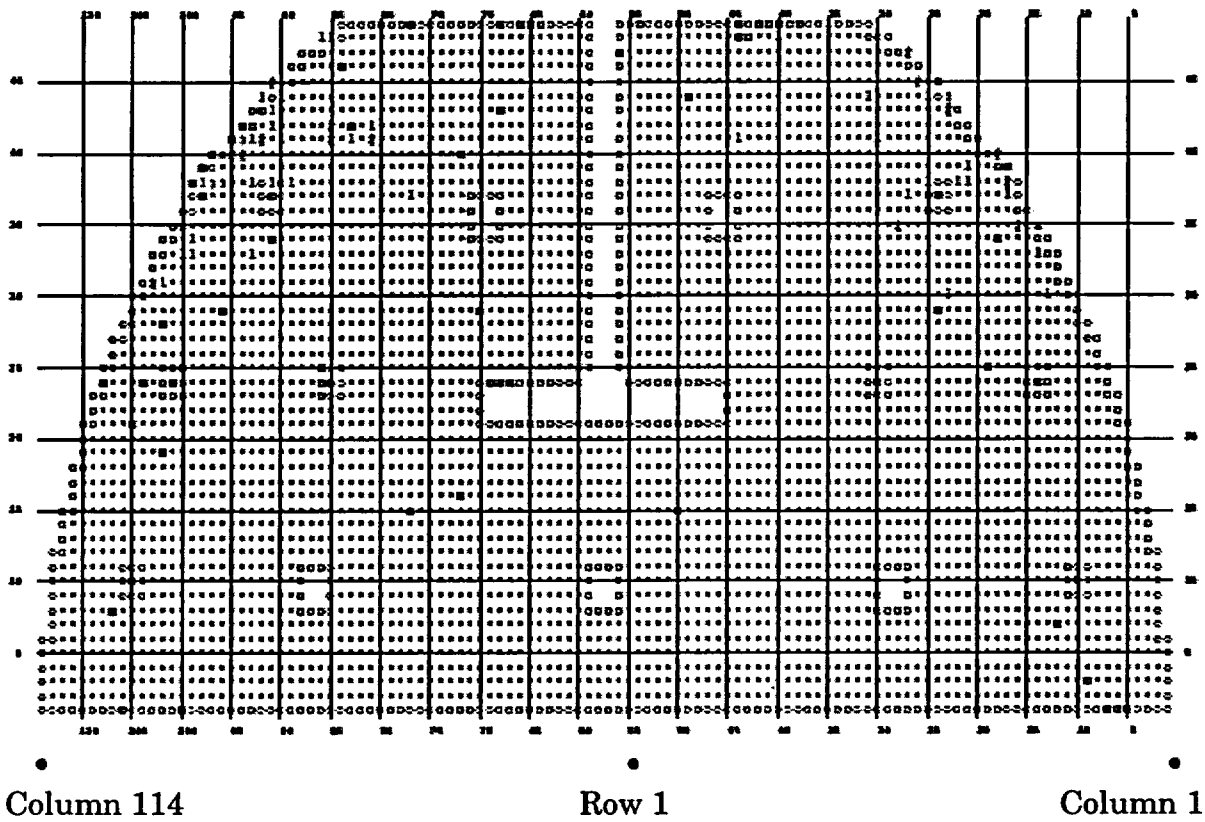
TYPES = Drilled / Quatrafoil  
 MATERIAL = 405 Stainless Steel  
 THICKNESS = 0.75" / 1.12"

**AVB INFORMATION:**

MATERIAL = Chrome Plated Inconel  
 THICKNESS = 0.296"

**NOTE:** Dimensions are to the centerline of the tube support structures.

Tube Sheet Layout:



Attachments:

- A SG 2A Eddy Current Indications and Anomalies
- B SG 2B Eddy Current Indications and Anomalies
- C SG 2C Eddy Current Indications and Anomalies
- D SG 2D Eddy Current Indications and Anomalies

**Attachment A**  
**SG 2A Eddy Current Indications and Anomalies**

Indication Codes

SG – A

Catawba Unit 2 D5 EOC14

Ind Type      Description

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SAI    Indication Single Axial Indication

TWD   Through Wall

WAR   Wear

Inspection techniques utilized:

Bobbin

These codes are used in the following eddy current report for steam generator 2A.

**Note: The reported tube indications are for those that were determined to be active in that they are service related. All original baseline indications are not reported here.**

## Active degradation for Steam Generator A

<u>SG</u>	<u>ROW</u>	<u>COL</u>	<u>VOLTS</u>	<u>DEG</u>	<u>CHN</u>	<u>IND</u>	<u>%TW</u>	<u>LOCATION</u>	<u>UTIL 1</u>	<u>UTIL 2</u>
A	7	23	1.59	65	170	SAI		TEH	+0.00	
	30	13	1.45	0	P4	TWD	19	AV3	0.09	WAR
	30	23	0.89	0	P4	TWD	12	AV2	0.15	WAR
	31	102	0.78	0	P4	TWD	10	AV4	-0.05	WAR
			0.62	0	P4	TWD	11	AV2	-0.05	WAR
	31	103	2.07	0	P4	TWD	24	AV2	-0.09	WAR
	32	15	0.82	0	P4	TWD	13	AV2	0.03	WAR
	33	14	0.41	0	P4	TWD	6	AV4	0.09	WAR
	33	93	1.03	0	P4	TWD	16	AV2	0.05	WAR
	33	99	0.53	0	P4	TWD	10	AV2	-0.08	WAR
	33	100	1.33	0	P4	TWD	18	AV3	0.00	WAR
	34	99	0.81	0	P4	TWD	13	AV4	0.00	WAR
			0.62	0	P4	TWD	10	AV3	0.00	WAR
	35	16	1.65	0	P4	TWD	21	AV3	0.15	WAR
			1.19	0	P4	TWD	17	AV2	0.15	WAR
	35	28	1.85	0	P4	TWD	23	AV3	0.00	WAR
	37	17	1.19	0	P4	TWD	17	AV3	0.12	WAR
			0.69	0	P4	TWD	11	AV2	0.09	WAR
	37	27	1.01	0	P4	TWD	17	AV2	-0.03	WAR
	37	39	0.63	0	P4	TWD	8	AV2	0.19	WAR
	37	77	1.18	0	P4	TWD	17	AV4	0.00	WAR
			1.41	0	P4	TWD	19	AV3	0.07	WAR
			1.54	0	P4	TWD	20	AV2	0.19	WAR
	38	17	1.18	0	P4	TWD	17	AV4	0.09	WAR
			1.37	0	P4	TWD	18	AV3	0.17	WAR
			1.15	0	P4	TWD	16	AV1	0.03	WAR
	38	21	1.31	0	P4	TWD	18	AV2	0.00	WAR
	38	22	0.85	0	P4	TWD	13	AV3	-0.09	WAR
			0.94	0	P4	TWD	14	AV2	-0.18	WAR
	38	23	0.7	0	P4	TWD	11	AV2	0.08	WAR
	38	25	0.9	0	P4	TWD	14	AV3	0.00	WAR
	38	89	0.84	0	P4	TWD	14	AV3	-0.08	WAR
			0.94	0	P4	TWD	15	AV2	0.08	WAR
	38	91	0.87	0	P4	TWD	14	AV4	0.00	WAR
			0.92	0	P4	TWD	15	AV2	0.00	WAR
			0.41	0	P4	TWD	9	AV4	-0.05	WAR
			0.9	0	P4	TWD	16	AV2	0.00	WAR
	38	93	1.16	0	P4	TWD	17	AV2	-0.05	WAR
	38	96	0.55	0	P4	TWD	10	AV4	-0.19	WAR
			1.15	0	P4	TWD	17	AV3	0.00	WAR
			2.8	0	P4	TWD	28	AV2	-0.24	WAR
	38	97	1.18	0	P4	TWD	17	AV4	0.00	WAR
			1.73	0	P4	TWD	22	AV3	-0.16	WAR
			4.15	0	P4	TWD	35	AV2	0.00	WAR
	38	98	0.73	0	P4	TWD	12	AV4	-0.08	WAR
			0.99	0	P4	TWD	15	AV3	-0.05	WAR
			1.19	0	P4	TWD	17	AV2	-0.16	WAR
	39	21	0.71	0	P4	TWD	10	AV2	-0.03	WAR

<u>SG</u>	<u>ROW</u>	<u>COL</u>	<u>VOLTS</u>	<u>DEG</u>	<u>CHN</u>	<u>IND</u>	<u>%TW</u>	<u>LOCATION</u>	<u>UTIL 1</u>	<u>UTIL 2</u>
A	40	18	3.08	0	P4	TWD	30	AV3 0.00	WAR	
	40	94	0.72	0	P4	TWD	12	AV4 0.00	WAR	
			2.11	0	P4	TWD	25	AV2 -0.03	WAR	
	40	95	1.33	0	P4	TWD	18	AV4 -0.03	WAR	
			1.76	0	P4	TWD	22	AV2 0.00	WAR	
	41	30	0.63	0	P4	TWD	10	AV2 0.03	WAR	
	41	44	0.74	0	P4	TWD	11	AV3 0.00	WAR	
			1.34	0	P4	TWD	17	AV2 0.06	WAR	
			1.48	0	P4	TWD	18	AV1 0.00	WAR	
	41	81	0.79	0	P4	TWD	13	AV4 0.00	WAR	
			1.47	0	P4	TWD	20	AV3 0.00	WAR	
			2.15	0	P4	TWD	25	AV2 0.00	WAR	
	41	83	1.09	0	P4	TWD	16	AV4 0.00	WAR	
			1.67	0	P4	TWD	21	AV3 0.00	WAR	
			1.47	0	P4	TWD	20	AV2 0.00	WAR	
	41	85	1.94	0	P4	TWD	23	AV3 0.00	WAR	
	41	90	0.96	0	P4	TWD	15	AV3 0.00	WAR	
	41	92	0.63	0	P4	TWD	10	AV4 -0.10	WAR	
			1.65	0	P4	TWD	21	AV3 0.00	WAR	
	41	93	0.66	0	P4	TWD	12	AV4 -0.05	WAR	
			0.99	0	P4	TWD	15	AV3 0.00	WAR	
	41	94	0.82	0	P4	TWD	13	AV4 -0.05	WAR	
			2.99	0	P4	TWD	30	AV3 0.03	WAR	
			1.67	0	P4	TWD	21	AV2 0.05	WAR	
	42	81	0.36	0	P4	TWD	10	AV4 0.12	WAR	
			0.82	0	P4	TWD	16	AV2 -0.25	WAR	
	42	85	1.06	0	P4	TWD	19	AV3 0.00	WAR	
			2.36	0	P4	TWD	28	AV2 0.00	WAR	
	42	91	1.02	0	P4	TWD	16	AV3 0.00	WAR	
	43	23	0.94	0	P4	TWD	15	AV2 0.12	WAR	
			0.73	0	P4	TWD	10	AV1 0.00	WAR	
	43	91	1.44	0	P4	TWD	19	AV4 0.00	WAR	
			1.07	0	P4	TWD	16	AV3 0.00	WAR	
			1.12	0	P4	TWD	17	AV2 0.00	WAR	
			0.63	0	P4	TWD	11	AV1 -0.00	WAR	
			1.32	0	P4	TWD	20	AV4 -0.05	WAR	
			0.94	0	P4	TWD	16	AV3 -0.03	WAR	
			0.99	0	P4	TWD	17	AV2 0.08	WAR	
			0.48	0	P4	TWD	10	AV1 0.05	WAR	
	44	23	1.4	0	P4	TWD	19	AV4 0.13	WAR	
			5.26	0	P4	TWD	38	AV3 0.00	WAR	
			2.06	0	P4	TWD	24	AV2 -0.03	WAR	
			1.34	0	P4	TWD	17	AV1 0.14	WAR	
	44	25	1.15	0	P4	TWD	17	AV3 0.09	WAR	
			1.18	0	P4	TWD	17	AV2 0.09	WAR	
	44	31	0.64	0	P4	TWD	8	AV2 0.12	WAR	
	44	90	0.63	0	P4	TWD	10	AV3 0.00	WAR	
	44	92	0.65	0	P4	TWD	11	AV4 0.00	WAR	
			1.1	0	P4	TWD	16	AV3 0.00	WAR	

<u>SG</u>	<u>ROW</u>	<u>COL</u>	<u>VOLTS</u>	<u>DEG</u>	<u>CHN</u>	<u>IND</u>	<u>%TW</u>	<u>LOCATION</u>	<u>UTIL 1</u>	<u>UTIL 2</u>
A	45	26	2.34	0	P4	TWD	26	AV3 0.12	WAR	
			0.9	0	P4	TWD	13	AV2 0.00	WAR	
	45	90	1.19	0	P4	TWD	17	AV3 0.00	WAR	
	45	91	1.9	0	P4	TWD	23	AV4 0.00	WAR	
			1.11	0	P4	TWD	16	AV3 -0.05	WAR	
			1.15	0	P4	TWD	17	AV2 -0.03	WAR	
	47	27	2.7	0	P4	TWD	29	AV3 -0.04	WAR	
			1.05	0	P4	TWD	18	AV2 -0.03	WAR	
	48	85	0.96	0	P4	TWD	15	AV4 0.00	WAR	
			0.7	0	P4	TWD	12	AV3 0.00	WAR	
	48	86	0.53	0	P4	TWD	13	AV4 0.00	WAR	
			0.51	0	P4	TWD	12	AV3 0.00	WAR	
	49	35	0.68	0	P4	TWD	10	AV1 0.07	WAR	
	49	70	0.67	0	P4	TWD	12	AV1 0.00	WAR	

**Attachment B**  
**SG 2B Eddy Current Indications and Anomalies**

Indication Codes

SG - B

Catawba Unit 2 D5 EOC14

Ind Type      Description

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CHG	Change in Indication
MAI	Indication Multiple Axial Indication
NEX	Anomaly No Expansion
NQI	Indication Non-Quantifiable Indication
OR	Data Quality
SAI	Indication Single Axial Indication
SCI	Indication Single Circumferential Indication
SVI	Indication Single Volumetric Indication
TWD	Through Wall
WAR	Wear

These codes are used in the following eddy current report for steam generator 2B.

Note: The reported tube indications are for those that were determined to be active in that they are service related. All original baseline indications are not reported here.



## Active degradation for Steam Generator B

<u>SG</u>	<u>ROW</u>	<u>COL</u>	<u>VOLTS</u>	<u>DEG</u>	<u>CHN</u>	<u>IND</u>	<u>%TW</u>	<u>LOCATION</u>	<u>UTIL 1</u>	<u>UTIL 2</u>
B	1	21	10.82	15	94	SCI		TEH +0.03		
	1	42	7.68	28	70	MAI		TEH +0.09		
	1	91	5.76	58	182	SAI		TEH +0.09		
	2	32	1.67	24	158	MAI		TEH +0.12		
	2	70	3.11	31	166	SAI		TEH +0.30		
	2	82	3.44	17	26	SAI		TEH +0.03		
	2	83	2.57	18	38	SAI		TEH +0.03		
	3	21	9.81	24	162	SAI		TEH +0.06		
	3	29	6.35	39	162	SAI		TEH +0.35		
	3	55	4.56	129	170	SAI		TEH +0.04		
	4	34	3.38	21	150	SAI		TEH +0.27		
	5	31	2.45	17	38	SAI		TEH +0.04		
	5	82	6.74	15	122	SAI		TEH +0.07		
	6	81	1.41	42	26	SAI		TEH +0.24		
	6	82	2.01	62	170	SAI		TEH +0.07		
	9	76	8.22	9	38	SAI		TEH +0.09 TO+0.23		
	10	81	3.29	28	162	SAI		TEH +0.06		
	11	82	1.06	18	146	SAI		TEH +0.10		
	12	82	1.06	25	122	SAI		TEH +0.06		
	12	92	3.46	35	182	SAI		TEH +0.06		
	14	81	1.21	18	58	SAI		TEH +0.24		
	15	27	0.28	98	54	SVI		01H +0.64		
	15	29	0.88	145	134	SVI		01H +0.51		
	15	56	1.22	0	P4	TWD	19	AV4 0.24	WAR	
	16	27	1	107	58	SVI		01H +0.59		
			0.41	132	10	SVI		01H +0.47		
			0.79	115	P1	NQI		01H 0.59		CHG
	16	28	0.47	122	P1	NQI		01H 0.40		
			0.82	88	118	SVI		01H +0.52		
	16	30	0.33	110	P1	NQI		01H 0.49		
			0.85	132	6	SVI		01H +0.54		
	16	31	0.28	86	158	SVI		01H +0.64		
	20	32	3.9	16	158	SAI		TEH +0.05		
	24	63	3.29	15	70	SAI		TEH +0.10		
	25	31	1.57	40	26	SAI		TEH +0.06		
	27	60	1.71	0	P4	TWD	22	AV2 0.24	WAR	
	30	12	3.11	32	193	NEX		TEC 1.00 TO 21.20		
	30	21	0.68	61	10	SAI		TEH +0.06		OR
	30	104	0.75	0	P4	TWD	13	AV3 0.12	WAR	
			0.64	0	P4	TWD	11	AV1 -0.03	WAR	
	32	103	1.01	0	P4	TWD	17	AV4 0.08	WAR	
			0.85	0	P4	TWD	15	AV3 0.11	WAR	
			0.92	0	P4	TWD	16	AV2 0.19	WAR	
	36	98	0.74	0	P4	TWD	13	AV4 0.00	WAR	
	36	99	0.5	0	P4	TWD	11	AV4 0.06	WAR	
	37	99	0.94	0	P4	TWD	16	AV4 0.15	WAR	
	38	75	0.82	0	P4	TWD	15	AV2 0.00	WAR	
	39	59	0.3	0	P4	TWD	7	AV4 0.00	WAR	
	44	91	1.17	0	P4	TWD	19	AV2 0.00	WAR	

<u>SG</u>	<u>ROW</u>	<u>COL</u>	<u>VOLTS</u>	<u>DEG</u>	<u>CHN</u>	<u>IND</u>	<u>%TW</u>	<u>LOCATION</u>	<u>UTIL 1</u>	<u>UTIL 2</u>
B	45	24	0.52	0	P4	TWD	11	AV4 -0.03	WAR	
	47	27	1.02	0	P4	TWD	16	AV4 0.00	WAR	
			1.47	0	P4	TWD	20	AV3 0.03	WAR	
			0.47	0	P4	TWD	10	AV2 -0.06	WAR	
	47	88	0.81	0	P4	TWD	14	AV4 0.00	WAR	
			0.86	0	P4	TWD	15	AV2 0.00	WAR	

**Attachment C**  
**SG 2C Eddy Current Indications and Anomalies**

Indication Codes

SG - C

Catawba Unit 2 D5 EOC14

Ind Type          Description

-----  
CHG    Change in Indication  
NQT    Indication Non-Quantifiable Indication  
SAI    Indication Single Axial Indication  
SVI    Indication Single Volumetric Indication  
TWD    Through Wall  
VOL    Volumetric  
WAR    Wear

These codes are used in the following eddy current report for steam generator 2C.

Note: The reported tube indications are for those that were determined to be active in that they are service related. All original baseline indications are not reported here.

## Active degradation for Steam Generator C

<u>SG</u>	<u>ROW</u>	<u>COL</u>	<u>VOLTS</u>	<u>DEG</u>	<u>CHN</u>	<u>IND</u>	<u>%TW</u>	<u>LOCATION</u>	<u>UTIL 1</u>	<u>UTIL 2</u>
C	1	19	2.58	26	58	SAI		TEH	+0.25	
	3	51	6.2	167	146	SAI		TEH	+0.09	
	7	109	0.82	84	186	SVI		04H	-0.75	
			1.23	127	195	NQI		04H	-0.89	CHG
	27	9	2.62	0	P4	TWD	26	AV2	-0.03	WAR
	28	10	1.01	0	P4	TWD	15	AV2	0.00	WAR
	28	11	0.8	0	P4	TWD	12	AV2	-0.08	WAR
	28	105	1.23	0	P4	TWD	18	AV3	0.00	WAR
	29	10	0.8	0	P4	TWD	13	AV3	-0.05	WAR
			0.75	0	P4	TWD	12	AV2	-0.15	WAR
	29	12	0.84	0	P4	TWD	13	AV3	0.08	WAR
			1.13	0	P4	TWD	16	AV2	0.03	WAR
	29	14	0.81	0	P4	TWD	13	AV3	-0.08	WAR
	30	15	1.4	0	P4	TWD	18	AV4	0.15	WAR
	31	11	0.62	0	P4	TWD	9	AV1	0.03	WAR
	31	12	1.65	0	P4	TWD	21	AV3	0.14	WAR
	33	12	1.37	0	P4	TWD	19	AV2	-0.13	WAR
			1	0	P4	TWD	16	AV1	0.00	WAR
	33	14	1.02	0	P4	TWD	15	AV3	-0.08	WAR
			1.72	0	P4	TWD	22	AV2	-0.13	WAR
	33	55	1.77	0	P4	TWD	23	AV3	0.00	WAR
	33	100	0.77	0	P4	TWD	13	AV2	0.14	WAR
	33	102	0.7	0	P4	TWD	12	AV2	0.13	WAR
	36	25	0.42	0	P4	TWD	8	AV2	0.03	WAR
	36	37	0.41	0	P4	TWD	9	AV2	0.06	WAR
	36	98	1.08	0	P4	TWD	16	AV2	0.11	WAR
	38	17	0.59	0	P4	TWD	9	AV4	-0.05	WAR
			1.47	0	P4	TWD	18	AV2	-0.08	WAR
			0.65	0	P4	TWD	10	AV1	0.00	WAR
	38	23	0.53	0	P4	TWD	10	AV4	0.05	WAR
			0.58	0	P4	TWD	11	AV2	0.00	WAR
	38	34	0.8	0	P4	TWD	14	AV2	0.30	WAR
	38	97	1.16	0	P4	TWD	18	AV2	-0.05	WAR
	38	99	3.33	0	P4	TWD	31	AV4	0.21	WAR
			1.13	0	P4	TWD	17	AV3	0.02	WAR
	39	17	0.52	0	P4	TWD	9	AV1	0.00	WAR
	39	18	1.19	0	P4	TWD	18	AV2	-0.03	WAR
	39	27	0.96	0	P4	TWD	15	AV3	-0.03	WAR
			0.76	0	P4	TWD	13	AV2	0.21	WAR
	39	94	1.23	0	P4	TWD	18	AV3	0.00	WAR
	39	97	0.97	0	P4	TWD	16	AV4	0.00	WAR
			0.51	0	P4	TWD	11	AV3	0.00	WAR
			0.74	0	P4	TWD	14	AV2	0.00	WAR
	40	20	1.67	0	P4	TWD	23	AV2	-0.05	WAR
	40	22	0.61	0	P4	TWD	12	AV2	-0.05	WAR
	40	27	0.95	0	P4	TWD	15	AV2	0.05	WAR
	41	20	0.51	0	P4	TWD	10	AV3	0.05	WAR
			0.63	0	P4	TWD	12	AV2	-0.03	WAR
			0.65	0	P4	TWD	12	AV1	-0.03	WAR

<u>SG</u>	<u>ROW</u>	<u>COL</u>	<u>VOLTS</u>	<u>DEG</u>	<u>CHN</u>	<u>IND</u>	<u>%TW</u>	<u>LOCATION</u>	<u>UTIL 1</u>	<u>UTIL 2</u>
C	43	93	0.48	0	P4	TWD	10	AV4 0.00	WAR	
			0.39	0	P4	TWD	9	AV3 0.00	WAR	
			0.83	0	P4	TWD	15	AV2 0.00	WAR	
	44	81	0.55	0	P4	TWD	12	AV4 0.00	WAR	
			2.75	0	P4	TWD	29	AV2 0.30	WAR	
			1.48	0	P4	TWD	21	AV3 0.27	WAR	
	48	48	0.62	77	P19	VOL		AV1 +0.00	WAR	
			0.88	143	P2	VOL		AV4 +0.00	WAR	
	49	59	1.48	102	P30	TWD	21	13C +0.00	WAR	
			2.55	117	P23	VOL		13C +0.34	WAR	
			2.61	0	P2	NQI		13C 0.28	WAR	
	49	76	1.99	0	P4	TWD	26	AV1 0.00	WAR	

**Attachment D**  
**SG 2D Eddy Current Indications and Anomalies**

**Indication Codes**

**SG - D**

**Catawba Unit 2 D5 EOC14**

**Ind Type      Description**

-----  
MAI    Indication Multiple Axial Indication  
NQL    Indication Non-Quantifiable Indication  
SCI    Indication Single Circumferential Indication  
TWD    Through Wall  
VOL    Indication Volumetric  
WAR    Wear

**These codes are used in the following eddy current report for steam generator 2D.**

**Note: The reported tube indications are for those that were determined to be active in that they are service related. All original baseline indications are not reported here.**

## Active degradation for Steam Generator D

<u>SG</u>	<u>ROW</u>	<u>COL</u>	<u>VOLTS</u>	<u>DEG</u>	<u>CHN</u>	<u>IND</u>	<u>%TW</u>	<u>LOCATION</u>	<u>UTIL 1</u>	<u>UTIL 2</u>
D	25	107	2.06	0 P4		TWD	18	AV2 0.00	WAR	
			0.77	0 P4		TWD	8	AV3 0.00	WAR	
	27	107	1.49	0 P4		TWD	14	AV2 0.27	WAR	
	28	10	0.92	0 P4		TWD	10	AV4 0.00	WAR	
			0.65	0 P4		TWD	8	AV3 0.00	WAR	
	28	16	1.87	0 P4		TWD	17	13C -0.47	WAR	
	28	71	1.79	0 P4		TWD	18	AV2 -0.31	WAR	
	28	105	1.49	0 P4		TWD	14	AV2 0.00	WAR	
	29	104	1.02	0 P4		TWD	10	AV2 0.10	WAR	
	30	102	2.43	0 P4		TWD	21	AV3 0.09	WAR	
	33	13	1.13	0 P4		TWD	12	AV4 0.00	WAR	
			2.3	0 P4		TWD	20	AV2 0.00	WAR	
			1.54	0 P4		TWD	15	AV3 0.00	WAR	
	33	79	1.09	0 P4		TWD	11	AV2 -0.03	WAR	
	34	98	1.82	0 P4		TWD	18	AV2 0.00	WAR	
	34	99	1.22	0 P4		TWD	13	AV2 0.09	WAR	
	34	100	1.11	0 P4		TWD	12	AV3 -0.03	WAR	
	35	14	1.5	0 P4		TWD	15	AV4 0.00	WAR	
			4.84	0 P4		TWD	32	AV2 0.00	WAR	
	35	17	6.55	43	98	SCI		TEH +0.31		
	35	43	4.29	135	98	SCI		TEH +0.42		
	35	96	0.54	0 P4		TWD	6	AV2 0.09	WAR	
	36	16	1.35	0 P4		TWD	13	AV4 0.00	WAR	
			1.12	0 P4		TWD	11	AV3 -0.06	WAR	
			4.82	0 P4		TWD	31	AV2 0.00	WAR	
			1.37	0 P4		TWD	13	AV1 0.00	WAR	
	36	65	2.31	0 P4		TWD	20	AV3 0.33	WAR	
	36	93	1.22	0 P4		TWD	13	AV2 0.03	WAR	
	36	94	1.06	0 P4		TWD	11	AV2 0.00	WAR	
			0.61	0 P4		TWD	7	AV1 0.00	WAR	
	36	96	0.77	0 P4		TWD	9	AV3 0.00	WAR	
			1.48	0 P4		TWD	15	AV2 -0.03	WAR	
	36	97	1.59	0 P4		TWD	15	AV2 0.00	WAR	
	36	98	1.32	0 P4		TWD	14	AV3 0.06	WAR	
	37	17	1.71	0 P4		TWD	17	AV4 0.00	WAR	
			1.67	0 P4		TWD	17	AV2 -0.03	WAR	
	38	18	2.24	0 P4		TWD	19	AV4 0.00	WAR	
			2.56	0 P4		TWD	21	AV2 0.14	WAR	
	38	19	1.41	0 P4		TWD	13	AV2 0.09	WAR	
	38	20	1.72	0 P4		TWD	16	AV4 0.00	WAR	
			1.5	0 P4		TWD	14	AV2 0.00	WAR	
	38	21	1.51	0 P4		TWD	14	AV2 0.00	WAR	
	38	26	1.08	0 P4		TWD	11	AV2 0.38	WAR	
	38	64	1.99	0 P4		TWD	17	AV2 0.00	WAR	
	38	78	1.82	0 P4		TWD	17	AV3 -0.12	WAR	
	38	90	1.06	0 P4		TWD	12	AV2 -0.12	WAR	
	38	93	2.53	0 P4		TWD	21	AV2 0.00	WAR	
			0.89	0 P4		TWD	10	AV3 0.06	WAR	
	39	81	0.87	0 P4		TWD	10	AV2 0.21	WAR	

<u>SG</u>	<u>ROW</u>	<u>COL</u>	<u>VOLTS</u>	<u>DEG</u>	<u>CHN</u>	<u>IND</u>	<u>%TW</u>	<u>LOCATION</u>	<u>UTIL 1</u>	<u>UTIL 2</u>
D	39	96	1.4	0	P4	TWD	14	AV3 0.00	WAR	
	39	98	0.95	0	P4	TWD	10	AV1 0.12	WAR	
	40	93	1.09	0	P4	TWD	12	AV2 0.15	WAR	
	40	94	1.52	0	P4	TWD	15	AV3 0.17	WAR	
			1.54	0	P4	TWD	16	AV2 0.00	WAR	
	40	97	0.93	0	P4	TWD	10	AV3 -0.06	WAR	
			0.85	0	P4	TWD	10	AV1 0.06	WAR	
	41	20	1.46	0	P4	TWD	15	AV4 0.00	WAR	
	41	59	4.57	33		138 MAI		TEH +0.37		
			2.83	11		34 SCI		TEH +0.77		
	41	60	3.35	81		138 MAI		TEH +0.31		
			2.82	14		46 SCI		TEH +0.55		
	41	77	0.77	0	P4	TWD	9	AV3 -0.03	WAR	
			2.04	0	P4	TWD	19	AV2 0.24	WAR	
	42	23	1.49	0	P4	TWD	14	AV4 0.00	WAR	
			2.63	0	P4	TWD	21	AV2 0.00	WAR	
	42	30	1.48	0	P4	TWD	14	AV2 0.30	WAR	
	42	32	1.47	0	P4	TWD	14	AV2 0.15	WAR	
	42	64	1.01	110		58 VOL		13C -0.15		
			3.05	98	P2	NQI		13C 0.06	WAR	
	42	85	1.04	0	P4	TWD	11	AV3 -0.03	WAR	
			1.21	0	P4	TWD	13	AV2 0.03	WAR	
	43	22	2.29	0	P4	TWD	21	AV4 0.00	WAR	
			0.98	0	P4	TWD	11	AV2 0.00	WAR	
			3.37	0	P4	TWD	26	AV3 0.00	WAR	
	43	29	1.2	0	P4	TWD	13	AV2 0.00	WAR	
	43	78	4.58	0	P4	TWD	31	AV3 0.00	WAR	
			2.58	0	P4	TWD	22	AV2 -0.06	WAR	
			0.89	0	P4	TWD	9	AV1 0.18	WAR	
	44	24	1.65	0	P4	TWD	15	AV3 -0.25	WAR	
	44	46	2.22	0	P4	TWD	20	AV3 -0.21	WAR	
	44	90	0.43	0	P4	TWD	5	AV1 0.00	WAR	
	44	91	0.71	0	P4	TWD	8	AV4 0.21	WAR	
	45	52	2.32	0	P2	TWD	18	15C -0.46	WAR	
	45	91	0.76	0	P4	TWD	9	AV4 0.00	WAR	
			0.62	0	P4	TWD	7	AV2 0.21	WAR	
	47	87	0.85	0	P4	TWD	9	AV4 0.10	WAR	
	48	78	4.52	0	P4	TWD	31	AV4 -0.31	WAR	
	48	82	0.86	0	P4	TWD	9	AV1 0.00	WAR	
	49	37	0.69	0	P4	TWD	10	AV1 -0.03	WAR	
	49	74	1.08	0	P4	TWD	12	AV4 0.24	WAR	
	49	84	0.67	0	P4	TWD	8	AV1 0.13	WAR	