

Steam Generator Inspection Summary Report

McGuire Unit 2 January - November 1997 Pre-Service Inspection of RSGs

Location: Hwy. 73, Cowans Ford, North Carolina 28216

NRC Docket No. 50-370

National Board No. 84

Commercial Service Date: March 1, 1984

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

Revision 0

Prepared By: *Muelde Cray* Date: *2/29/00*

Reviewed By: *R L Cape* Date: *2/29/00*

Approved By: *Morris Sample* Date: *2/29/00*

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3	State of North Carolina Department of Labor C/o J. M. Givens, Jr.

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: McGuire Nuclear Station, Highway 73, Cowans Ford, N. C. 28216
(Name and Address of Plant)
3. Plant Unit: 2
4. Owner Certificate of Authorization (if required) N/A
5. Commercial Service Date: March 1, 1984
6. National Board Number for Unit 84
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	BWI	7700-02	NC-302674	159
Steam Generator 2B	BWI	7700-04	NC-302675	161
Steam Generator 2C	BWI	7700-01	NC-302676	158
Steam Generator 2D	BWI	7700-03	NC-302677	160

Note: Supplemental sheets in form of lists, sketches, or drawings may be used provided (1) size is 8¹/₂ 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 January 28, 1997 to November 14, 1997
- 9. Inspection Period Identification: 1st and 2nd Periods of the 2nd Interval
- 10. Inspection Interval Identification: 2nd Inspection Interval
- 11. Applicable Edition of Section XI 1989 Addenda None
- 12. Date/Revision of Inspection Plan: Tech Spec 3-4.4.5 Steam Generator 12/12/96 Rev. Steam Generator Maintenance Manual Rev. 2

13. Abstract of Examinations and Test. Reference attached Inspection Summary Report dated 2/28/00.

14. Abstract of Results of Examination and Tests. Reference attached Inspection Summary Report dated 2/28/00.

15. Abstract of Corrective Measures. Reference attached Inspection Summary Report dated 2/28/00.

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 2-29 20 00 Signed Duke Energy Corp. By Mous Fangle
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 North Carolina employed by *The HSBI&I Co. of Hartford, Ct have inspected the components described in this Owner's Report during the period 1-28-1997 to 11-14-1997, 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 Owner's 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 Owner's 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

[Signature] Commissions NB 1728, NC 853, N-I
Inspector's Signature National Board, State, Province, and Endorsements

Date 3-3 19 2000

* The Hartford Steam Boiler Inspection & Insurance Co.
200 Ashford Center North
Suite 300
Atlanta, GA. 30338

February 28, 2000

Gerald W Crump

Subject: McGuire Nuclear Station
Unit 2 Steam Generator
August, 1997, Baseline Inspection

Dear Sir,

1. The following quantity of tubes were inspected from either side of the generator.

<u>Steam Generator</u>	<u>Tubes Inspected</u> <u>Full Length</u>
A	6633
B	6633
C	6633
D	6633

2. The following information is submitted concerning tube indications of imperfections. (The attached list identifies the tubes with imperfections, their locations and their size.)

<u>Steam Generator</u>	<u>Attachment</u>
A	1
B	2
C	3
D	4

3. The following tubes were removed from service by plugging.

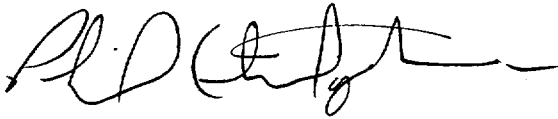
Steam Generator

Attachment

A	5
B	6
C	7
D	8

If further information is required, please call me at 875-5584.

Sincerely,



P D Christopher
Eddy Current Data Administrator

PDC:pd

FTI TUBAN II (Version 2.3) 02/28/2000 13:33:10
McGuire N.S. - Unit Two Replacement
S/G A
6/97 BASELINE
BOBBIN,MRPC C/L SI,MRPC H/L SI,MRPC UBEND SI

Page 1

ATTACHMENT #1 - INDICATIONS OF IMPERFECTIONS
INDS OF IMPERFECTIONS - SGA

ROW	COL	OUTAGE	TEST	TYPE	IND	%TW	VOLTS	LOCATION	
1	36	6/97	B	BOBBIN	ADI		0.11	05H	+28.23
6	41	6/97	B	BOBBIN	ADI		0.14	01H	+7.22
8	79	6/97	B	BOBBIN	ODI	1	0.08	04H	+8.66
10	37	6/97	B	BOBBIN	ODI	1	0.17	01H	+26.76
26	43	6/97	B	BOBBIN	ADI		0.10	06H	+38.16
27	36	6/97	B	BOBBIN	ADI		0.11	07H	+34.62
32	49	6/97	B	BOBBIN	ADI		0.10	TSC	+14.40
35	40	6/97	B	BOBBIN	ADI		0.09	02H	+30.21
35	58	6/97	B	BOBBIN	ODI	7	0.22	05C	+15.18
44	105	6/97	B	BOBBIN	ADI		0.12	06C	+22.03
47	44	6/97	B	BOBBIN	ADI		0.09	TSH	+16.25
63	56	6/97	B	BOBBIN	ADI		0.10	03H	+20.10
69	50	6/97	B	BOBBIN	ADI		0.08	08H	+22.25
72	103	6/97	B	BOBBIN	ADI		0.06	04C	+27.57
75	68	6/97	B	BOBBIN	ODI	3	0.10	05H	+6.51
80	71	6/97	B	BOBBIN	ADI		0.09	01H	+16.30
88	37	6/97	B	BOBBIN	ADI		0.05	06C	+4.21
91	118	6/97	B	BOBBIN	ODI	2	0.14	04H	+8.95
94	41	6/97	B	BOBBIN	ODI	2	0.09	05C	+6.41
94	107	6/97	B	BOBBIN	ODI	4	0.18	02H	+18.84
95	72	6/97	B	BOBBIN	ODI	7	0.17	01H	+13.89
95	74	6/97	B	BOBBIN	ODI	5	0.34	01H	+11.53
96	49	6/97	B	BOBBIN	ODI	3	0.14	05H	+24.67
103	74	6/97	B	BOBBIN	ODI	11	0.26	04H	+23.19
104	81	6/97	B	BOBBIN	ODI	4	0.16	04H	+23.43

Total Indications Found = 25
Total Tubes Found = 25

ATTACHMENT #2 - INDICATIONS OF IMPERFECTIONS
 INDS OF IMPERFECTIONS - SGB
 ROW COL OUTAGE TEST TYPE

IND	%TW	VOLTS	LOCATION		
1	10	01/97	BOBBIN	OXP	33.04 TEC +0.83 to +3.54
1	18	01/97	BOBBIN	OXP	31.29 TEC +25.02 to +26.39
		01/97	BOBBIN	OXP	45.36 TEC +0.47 to +3.46
1	24	01/97	BOBBIN	OXP	30.33 TEC +5.44 to +6.55
1	26	01/97	BOBBIN	OXP	27.94 TEC +0.36 to +2.30
		01/97	BOBBIN	OXP	27.94 TEC +25.21 to +26.43
1	44	01/97	BOBBIN	ADI	0.07 06C +23.25
		01/97	BOBBIN	OXP	27.25 TEC +5.33 to +6.32
1	110	01/97	BOBBIN	OXP	30.43 TEC +0.20 to +2.87
1	112	01/97	BOBBIN	ODI	5 0.13 TSC +5.78
1	118	01/97	BOBBIN	OXP	42.91 TEC +0.38 to +2.93
2	117	01/97	BOBBIN	OXP	42.97 TEC +0.82 to +5.49
3	112	01/97	BOBBIN	ODI	5 0.11 08H +15.66
		01/97	BOBBIN	ODI	8 0.15 03C +37.46
5	54	01/97	BOBBIN	ODI	7 0.11 01H +22.22
6	7	01/97	BOBBIN	ODI	5 0.09 05C +30.00
6	11	01/97	BOBBIN	ODI	6 0.08 05C +19.83
7	64	01/97	BOBBIN	ODI	6 0.16 01H +9.40
7	92	01/97	BOBBIN	ODI	3 0.07 07H +10.33
		01/97	BOBBIN	ODI	4 0.47 01H +23.29
8	5	01/97	BOBBIN	SKR	25.94 TEC +0.00 to +0.68
9	130	01/97	BOBBIN	ADI	0.14 03H +18.40
11	6	01/97	BOBBIN	ODI	1 0.20 03H +7.22
11	98	01/97	BOBBIN	ODI	5 0.27 07H +17.91
15	116	01/97	BOBBIN	OXP	48.66 TEC +0.00 to +7.13
15	140	01/97	BOBBIN	OXP	29.00 TEC +0.00 to +12.15
17	54	01/97	BOBBIN	ODI	2 0.15 05C +7.31
18	105	01/97	BOBBIN	ODI	13 0.12 02C +10.97
18	131	01/97	BOBBIN	ADI	0.22 06H +37.38
		01/97	BOBBIN	ODI	1 0.14 06H +24.15
24	57	01/97	BOBBIN	ODI	2 0.19 01H +19.52
		01/97	BOBBIN	ODI	8 0.12 01H +16.94
24	135	01/97	BOBBIN	ADI	0.12 03H +17.99
27	72	01/97	BOBBIN	ADI	0.09 01H +27.96
27	126	01/97	BOBBIN	ADI	0.17 03C +10.08
29	34	01/97	BOBBIN	ADI	0.09 03C +6.86
29	94	01/97	BOBBIN	ODI	2 0.15 05C +26.76
31	70	01/97	BOBBIN	ODI	9 0.10 03C +26.98
32	87	01/97	BOBBIN	ODI	9 0.12 05H +15.16
34	131	01/97	BOBBIN	ODI	3 0.15 06H +12.88
36	35	01/97	BOBBIN	ODI	5 0.16 02C +30.64
36	37	01/97	BOBBIN	ADI	0.13 01C +6.93
40	131	01/97	BOBBIN	ADI	0.13 04H +6.27
43	70	01/97	BOBBIN	NQI	0.35 FB6 +9.94
43	100	01/97	BOBBIN	ODI	2 0.11 05C +24.90
44	59	01/97	BOBBIN	ODI	7 0.09 04C +6.72
45	110	01/97	BOBBIN	ODI	2 0.14 02H +4.76
		01/97	BOBBIN	ODI	10 0.08 07C +35.11
47	80	01/97	BOBBIN	ADI	0.14 04H +30.69
48	73	01/97	BOBBIN	ODI	4 0.12 06H +11.71
48	109	01/97	BOBBIN	ODI	2 0.19 02C +3.71
49	70	01/97	BOBBIN	ODI	10 0.11 01H +27.16
49	84	01/97	BOBBIN	ODI	2 0.09 01H +29.60
54	61	01/97	BOBBIN	ODI	3 0.14 02C +20.24
54	73	01/97	BOBBIN	ADI	0.11 05H +12.76
54	83	01/97	BOBBIN	ADI	0.16 04H +16.37
57	38	01/97	BOBBIN	ODI	8 0.13 02H +16.29
65	100	01/97	BOBBIN	OXP	28.23 TEC +2.45 to +11.98
66	83	01/97	BOBBIN	ADI	0.12 05H +10.75
70	29	01/97	BOBBIN	OXP	50.66 TEC +19.64 to +20.67
71	76	01/97	BOBBIN	ODI	5 0.08 03H +20.88
72	53	01/97	BOBBIN	ODI	3 0.15 01H +25.75
74	71	01/97	BOBBIN	ODI	13 0.11 05H +14.52
74	81	01/97	BOBBIN	ADI	0.25 05H +10.17
76	77	01/97	BOBBIN	ADI	0.12 02C +20.65

FTI TUBAN II (Version 2.3) 02/28/2000 13:33:59
McGuire N.S. - Unit Two Replacement
S/G B
01/97 BASELINE
BOBBIN,MRPC C/L SI,MRPC H/L SI,MRPC UBEND SI

ATTACHMENT #2 - INDICATIONS OF IMPERFECTIONS
INDS OF IMPERFECTIONS - SGB

ROW	COL	OUTAGE	TEST	TYPE	IND	%TW	VOLTS	LOCATION	
87	78	01/97	BOBBIN	ODI	14	0.13	01C		+31.21
87	94	01/97	BOBBIN	ODI	3	0.18	03H		+32.05
88	57	01/97	BOBBIN	ODI	1	0.89	CBH		+8.32
89	44	01/97	BOBBIN	ODI	6	0.18	TSC		+6.26
89	66	01/97	BOBBIN	ODI	7	0.13	01C		+22.82
		01/97	BOBBIN	ODI	8	0.29	01H		+7.48
92	57	01/97	BOBBIN	ADI		0.08	02H		+32.15
92	71	01/97	BOBBIN	ODI	2	0.30	04H		+23.79
93	96	01/97	BOBBIN	ADI		0.18	03H		+27.66
104	49	01/97	BOBBIN	ODI	8	0.16	04H		+26.84
106	55	01/97	BOBBIN	SKR		27.15	TEC		+0.19 to +0.73

Total Indications Found = 76
Total Tubes Found = 67

FTI TUBAN II (Version 2.3) 02/28/2000 13:34:45
 McGuire N.S. - Unit Two Replacement
 S/G C
 01/97 BASELINE
 BOBBIN,MRPC C/L SI,MRPC H/L SI,MRPC UBEND SI

ATTACHMENT #3 - INDICATIONS OF IMPERFECTIONS
 INDS OF IMPERFECTIONS - SGC

ROW	COL	OUTAGE	TEST TYPE	IND	%TW	VOLTS	LOCATION		
27	44	01/97	BOBBIN	ODI	9	0.11	01H	+23.02	to +26.00
40	37	01/97	BOBBIN	ODI	11	0.09	06H	+24.75	
43	60	01/97	BOBBIN	ADI		0.08	01H	+5.65	
43	66	01/97	BOBBIN	ODI	13	0.07	02C	+12.03	
44	105	01/97	BOBBIN	ADI		0.11	TSC	+11.14	
49	46	01/97	BOBBIN	ODI	12	0.11	02C	+7.64	
49	68	01/97	BOBBIN	ODI	1	0.11	02C	+12.82	
54	131	01/97	BOBBIN	ODI	12	0.07	02H	+19.67	
56	133	01/97	BOBBIN	ODI	7	0.11	08H	+4.00	
59	28	01/97	BOBBIN	ODI	8	0.22	06H	+14.21	
69	120	01/97	BOBBIN	ODI	12	0.18	02H	+8.08	
71	124	01/97	BOBBIN	ODI	12	0.18	02H	+8.08	
71	124	01/97	BOBBIN	ODI	12	0.18	02H	+8.08	
74	71	01/97	BOBBIN	ODI	7	0.16	03H	+37.57	
76	31	01/97	BOBBIN	ODI	12	0.08	07H	+12.12	
82	49	01/97	BOBBIN	ODI	12	0.08	07H	+12.12	
88	87	01/97	BOBBIN	ODI	6	0.08	06C	+5.23	
				ODI				+3.26	to +4.86
				ODI				+7.92	to +8.94

Total Indications Found = 16
 Total Tubes Found = 16

FTI TUBAN II (Version 2.3) 02/28/2000 13:35:43
 McGuire N.S. - Unit Two Replacement
 S/G D
 01/97 BASELINE
 BOBBIN,MRPC C/L SI,MRPC H/L SI,MRPC UBEND SI

ATTACHMENT #4 - INDICATIONS OF IMPERFECTIONS
 INDS OF IMPERFECTIONS - SGD
 ROW COL OUTAGE TEST TYPE

IND	%TW	VOLTS	LOCATION		
1	50	01/97	BOBBIN	OXP	34.48 TEH +0.79 to +24.42
1	58	01/97	BOBBIN	OXP	33.62 TEH +0.00 to +25.01
6	91	01/97	BOBBIN	ODI	7 0.18 TSH +7.73
		01/97	BOBBIN	ODI	7 0.74 04H +25.14
9	14	01/97	BOBBIN	ODI	5 0.08 01C +14.76
16	9	01/97	BOBBIN	OXP	32.30 TEH +13.24 to +19.03
18	121	01/97	BOBBIN	ODI	3 0.13 01C +14.57
21	132	01/97	BOBBIN	ADI	0.08 03H +11.84
21	134	01/97	BOBBIN	OXP	39.13 TEH +9.50 to +22.10
21	142	01/97	BOBBIN	OXP	42.11 TEH +6.70 to +21.33
23	28	01/97	BOBBIN	OXP	32.85 TEH +0.00 to +5.75
23	34	01/97	BOBBIN	OXP	47.60 TEC +0.00 to +4.29
23	36	01/97	BOBBIN	OXP	28.41 TEH +13.19 to +19.81
23	42	01/97	BOBBIN	OXP	26.65 TEC +0.00 to +4.62
23	44	01/97	BOBBIN	OXP	50.32 TEH +14.34 to +19.69
23	50	01/97	BOBBIN	OXP	50.29 TEC +0.00 to +4.44
32	45	01/97	BOBBIN	OXP	31.22 TEH +13.36 to +18.38
32	53	01/97	BOBBIN	OXP	37.06 TEH +6.76 to +16.77
32	61	01/97	BOBBIN	OXP	32.75 TEH +9.50 to +18.53
33	26	01/97	BOBBIN	OXP	31.91 TEH +0.00 to +13.15
33	42	01/97	BOBBIN	OXP	40.63 TEH +0.00 to +13.37
34	137	01/97	BOBBIN	OXP	33.71 TEH +0.00 to +12.84
35	120	01/97	BOBBIN	OXP	41.87 TEH +0.00 to +3.04
35	128	01/97	BOBBIN	OXP	33.47 TEH +0.00 to +3.23
39	30	01/97	BOBBIN	OXP	28.65 TEC +0.24 to +1.00
39	46	01/97	BOBBIN	OXP	27.08 TEC +0.26 to +2.02
39	98	01/97	BOBBIN	OXP	34.70 TEH +1.66 to +7.76
39	114	01/97	BOBBIN	OXP	44.19 TEH +0.81 to +7.91
39	124	01/97	BOBBIN	OXP	28.65 TEH +12.34 to +19.11
39	132	01/97	BOBBIN	OXP	49.29 TEH +12.71 to +19.39
		01/97	BOBBIN	OXP	50.93 TEH +0.91 to +6.78
41	34	01/97	BOBBIN	ADI	0.14 02H +15.85
42	115	01/97	BOBBIN	OXP	25.33 TEC +12.30 to +20.83
42	123	01/97	BOBBIN	OXP	35.12 TEC +17.42 to +20.27
52	37	01/97	BOBBIN	ODI	10 0.10 03C +16.49
52	133	01/97	BOBBIN	OXP	32.76 TEC +0.15 to +7.87
56	67	01/97	BOBBIN	OXP	30.72 TEC +19.26 to +22.28
59	128	01/97	BOBBIN	OXP	32.43 TSC -0.97
59	130	01/97	BOBBIN	OXP	35.69 TSC -0.59
59	132	01/97	BOBBIN	OXP	29.29 TSC -0.80
60	131	01/97	BOBBIN	OXP	27.75 TSC -0.88
69	60	01/97	BOBBIN	ODI	1 0.19 05H +13.32
75	118	01/97	BOBBIN	OXP	25.93 TEC +15.04 to +23.59
82	37	01/97	BOBBIN	ADI	0.19 08H +31.70
92	105	01/97	BOBBIN	ODI	9 0.13 02C +23.26
94	71	01/97	BOBBIN	ADI	0.11 03C +33.55
95	104	01/97	BOBBIN	ODI	8 0.19 TSC +14.58
97	112	01/97	BOBBIN	ODI	6 0.07 04C +15.01
98	33	01/97	BOBBIN	ADI	0.19 04C +21.11
102	101	01/97	BOBBIN	ODI	11 0.10 01C +31.33
105	84	01/97	BOBBIN	ODI	9 0.10 02H +13.44
106	83	01/97	BOBBIN	ADI	0.55 01C +28.18
108	81	01/97	BOBBIN	ADI	0.16 04C +32.81
108	97	01/97	BOBBIN	OXP	27.58 TEC +17.87 to +25.15
110	53	01/97	BOBBIN	SKR	29.85 TEH +0.74
111	92	01/97	BOBBIN	ADI	0.12 04C +19.05
112	79	01/97	BOBBIN	ADI	0.16 08H +35.62
118	63	01/97	BOBBIN	ODI	12 0.08 01C +26.86
		01/97	BOBBIN	ODI	13 0.08 06C +25.86

Total Indications Found = 59
 Total Tubes Found = 56

FTI TUBAN II (Version 2.3) 02/29/2000 11:59:39
 McGuire N.S. - Unit Two Replacement
 S/G A
 6/97 BASELINE

Page 1

ATTACHMENT #5 - PLUGGED TUBES
 COUNT ROW COL

COUNT ROW COL

Total Data Items Found = 0
Total Tubes Found = 0

***** FTI TUBAN II (Version 2.3) 02/29/2000 12:00:55 *****
***** McGuire N.S. - Unit Two Replacement *****
***** S/G B *****
***** 01/97 BASELINE *****

Page 1

ATTACHMENT #6 - PLUGGED TUBES
COUNT ROW COL

COUNT ROW COL

1. 12 117

Total Data Items Found = 1
Total Tubes Found = 1

***** FTI TUBAN II (Version 2.3) 02/29/2000 12:01:53 *****
***** McGuire N.S. - Unit Two Replacement *****
***** S/G C *****
***** 01/97 BASELINE *****

ATTACHMENT #7 - PLUGGED TUBES
COUNT ROW COL

COUNT ROW COL

Total Data Items Found = 0
Total Tubes Found = 0

FTI TUBAN II (Version 2.3) 02/29/2000 12:02:44
McGuire N.S. - Unit Two Replacement
S/G D
01/97 BASELINE

ATTACHMENT #8 - PLUGGED TUBES
COUNT ROW COL

COUNT ROW COL

1. 8 23

Total Data Items Found = 1
Total Tubes Found = 1