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**DUKE POWER**

April 25, 1990

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

Subject: Catawba Nuclear Station, Unit 2  
Docket No. 50-414  
Steam Generator Inspection Report

Dear Sir:

Pursuant to Technical Specification 3/4.4.5.5.b, the following information is submitted:

1. The following quantity of tubes was inspected from the inlet side of the steam generator:

<u>Steam Generator</u>	<u>Tubes Inspected</u>	
	<u>Full Length</u>	<u>Partial Length</u>
A	1456	1456
B	1519	1522
C	1443	1446
D	1542	1542

2. The following information is submitted concerning tube indications of imperfections. (The attached lists identify the tubes with imperfections, their location and their size.)

<u>Steam Generator</u>	<u>Attachment</u>
A	1
B	3
C	5
D	7

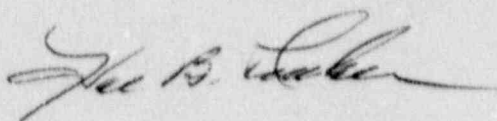
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3. The following quantities of tubes were removed from service. (The tubes are identified in the attachments):

<u>Steam Generator</u>	<u>Number of Tubes Plugged</u>	<u>Attachment</u>
A	2	2
B	5	4
C	1	6
D	0	

Very truly yours,



Hal B. Tucker

MHH-31/lcs

xc: Mr. S. D. Ebnetter, Regional Administrator  
U. S. Nuclear Regulatory Commission  
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Dr. K. N. Jabbour  
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Mr. W. T. Orders  
NRC Resident Inspector  
Catawba Nuclear Station

Plant: CATAWBA UNIT 2  
Outage: 03/89 RFD

Steam Generator: A

QUERY: ATTACHMENT 1 INDICATIONS OF IMPERFECTIONS

ROW	COL	OUTAGE	INDICATION	VALUE	VOLTS	ELEVATION	INCHES
1	1	03/89 RFD	OD (general)	19 % TW	1.12	7	+12.20
2	73	03/89 RFD	OD (general)	S/N	0.53	1	+14.90
3	83	03/89 RFD	OD (general)	S/N	0.91	9	- 4.40
4	85	03/89 RFD	OD (general)	S/N	0.66	7	+15.10
6	5	03/89 RFD	OD (general)	19 % TW	0.77	15	+ 4.10
8	113	03/89 RFD	OD (general)	S/N	0.47	10	+22.20
12	10	03/89 RFD	OD (general)	S/N	0.66	2	- 4.20
17	80	03/89 RFD	OD (general)	S/N	0.50	13	+14.10
18	36	03/89 RFD	OD (general)	S/N	0.81	14	+14.80
19	43	03/89 RFD	OD (general)	19 % TW	0.90	13	+ 6.70
20	54	03/89 RFD	OD (general)	19 % TW	0.80	15	4.10
24	42	03/89 RFD	OD (general)	S/N	1.22	2	4.80
24	68	03/89 RFD	OD (general)	55 % TW	1.09	3	
	03/89 RFD	8x1		50 % TW	3.19	3	
24	69	03/89 RFD	OD (general)	71 % TW	3.66	3	
	03/89 RFD	8x1		77 % TW	8.50	3	
25	37	03/89 RFD	OD WEAR	10 % TW	1.64	AVB3	
25	41	03/89 RFD	OD (general)	S/N	1.27	2	- 4.60
25	71	03/89 RFD	8x1	18 % TW	0.62	0	- 2.00
25	100	03/89 RFD	OD (general)	S/N	0.47	4	+10.10
26	70	03/89 RFD	8x1	25 % TW	0.89	3	- 5.00
27	102	03/89 RFD	OD (general)	S/N	0.55	7	+28.10
28	45	03/89 RFD	OD (general)	S/N	0.44	5	+ 7.40
28	102	03/89 RFD	OD (general)	S/N	0.47	3	+17.30
29	22	03/89 RFD	OD (general)	S/N	0.43	3	+14.70
29	96	03/89 RFD	OD (general)	S/N	0.60	10	+10.30
29	100	03/89 RFD	OD (general)	S/N	0.56	6	+ 6.30
31	73	03/89 RFD	OD (general)	S/N	0.45	15	+13.30
32	55	03/89 RFD	OD (general)	S/N	0.88	10	+26.40
35	14	03/89 RFD	OD WEAR	7 % TW	0.58	AVB3	
38	97	03/89 RFD	OD WEAR	8 % TW	0.67	AVB2	
38	99	03/89 RFD	OD WEAR	7 % TW	0.73	AVB3	
39	17	03/89 RFD	OD WEAR	7 % TW	0.99	AVB3	
39	98	03/89 RFD	OD WEAR	9 % TW	0.77	AVB3	
40	18	03/89 RFD	OD WEAR	5 % TW	0.81	AVB3	
40	19	03/89 RFD	OD (general)	S/N	0.54	7	+22.80
41	31	03/89 RFD	OD (general)	S/N	0.64	11	- 1.60
41	95	03/89 RFD	OD WEAR	7 % TW	0.70	AVB2	
42	94	03/89 RFD	OD WEAR	7 % TW	1.11	AVB2	
44	23	03/89 RFD	OD WEAR	4 % TW	0.64	AVB3	
45	24	03/89 RFD	OD WEAR	12 % TW	1.60	AVB2	
	03/89 RFD	OD WEAR	4 % TW	0.82	AVB3		
45	91	03/89 RFD	OD WEAR	5 % TW	0.66	AVB4	
49	66	03/89 RFD	OD (general)	S/N	0.58	7	

TOTAL TUBES FOUND = 41

TOTAL INDICATIONS FOUND = 44

TOTAL TUBES IN INPUT FILE = 4570

TOTAL TUBES INSPECTED = 1456



Plant: CATANBA UNIT 2  
Outage: 03/09 RFD

Steam Generator: A

QUERY: ATTACHMENT 2 TUBES PLUGGED

ROW	COL	OUTAGE	INDICATION	VALUE	VOLTS	ELEVATION	INCHES
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24	68	03/89 RFD	PLUGGED	MECH		CTS-P	
24	69	03/89 RFD	PLUGGED	MECH		CTS-P	

TOTAL TUBES FOUND = 2  
TOTAL INDICATIONS FOUND = 2

TOTAL TUBES IN INPUT FILE = 4578  
TOTAL TUBES INSPECTED = 1456

Plant: CATAWBA UNIT 2  
Outage: 03/89 RFD

Steam Generator: B

## QUERY: ATTACHMENT 3 INDICATIONS OF IMPERFECTIONS

ROW	COL	OUTAGE	INDICATION	VALUE	VOLTS	ELEVATION	INCHES
1	14	03/89 RFD	OD (general)	S/N	0.41	16	- 3.10
		03/89 RFD	OD (general)	S/N	0.51	16	+ 3.00
1	57	03/89 RFD	OD (general)	S/N	0.45	5	- 4.40
1	62	03/89 RFD	OD (general)	19 % TW	0.67	12	- 3.40
3	71	03/89 RFD	OD (general)	S/N	0.27	4	-12.10
3	74	03/89 RFD	OD (general)	19 % TW	2.38	5	+ 1.00
6	54	03/89 RFD	OD (general)	S/N	0.75	9	-13.50
7	52	03/89 RFD	OD (general)	S/N	0.51	11	+34.50
		03/89 RFD	OD (general)	S/N	0.73	10	+19.10
11	105	03/89 RFD	OD (general)	S/N	0.28	7	- 9.70
17	90	03/89 RFD	OD (general)	S/N	0.85	14	+ 1.40
		03/89 RFD	8x1	49 % TW	3.30	14	+ 1.40
21	59	03/89 RFD	OD (general)	S/N	0.52	8	
21	52	03/89 RFD	OD (general)	60 % TW	0.44	8	- 0.30
22	97	03/89 RFD	OD (general)	31 % TW	0.88	3	+ 5.40
23	86	03/89 RFD	OD (general)	S/N	0.49	2	-10.20
24	55	03/89 RFD	OD (general)	S/N	0.47	7	+24.50
26	102	03/89 RFD	OD (general)	S/N	0.56	8	- 2.00
27	16	03/89 RFD	OD (general)	25 % TW	0.66	9	- 3.50
28	106	03/89 RFD	OD (general)	S/N	0.59	HTS-5	+ 2.90
29	105	03/89 RFD	OD (general)	38 % TW	0.78	HTS-5	+ 2.80
30	73	03/89 RFD	OD (general)	S/N	0.43	10	+ 4.10
		03/89 RFD	OD (general)	34 % TW	0.74	4	+20.00
30	90	03/89 RFD	OD (general)	S/N	0.56	4	+19.50
31	89	03/89 RFD	OD (general)	S/N	0.53	17	+ 2.20
		03/89 RFD	8x1	45 % TW	2.36	17	- 0.10
		03/89 RFD	8x1	44 % TW	2.06	17	+ 2.20
38	93	03/89 RFD	OD (general)	S/N	0.62	6	-18.60
35	34	03/89 RFD	OD (general)	S/N	0.53	1	+ 5.30
36	36	03/89 RFD	OD (general)	S/N	0.47	10	+40.60
37	35	03/89 RFD	OD (general)	S/N	0.37	9	- 3.80
38	59	03/89 RFD	OD (general)	S/N	0.60	9	+ 8.50
38	92	03/89 RFD	OD (general)	19 % TW	0.50	4	+29.40
39	55	03/89 RFD	OD (general)	19 % TW	1.13	16	+ 2.20
		03/89 RFD	8x1	24 % TW	1.07	16	+ 2.20
39	97	03/89 RFD	OD (general)	19 % TW	1.25	13	- 4.70
42	21	03/89 RFD	OD (general)	S/N	0.83	HTS-5	+ 1.10
42	59	03/89 RFD	OD (general)	19 % TW	1.02	11	- 3.50
		03/89 RFD	8x1	35 % TW	1.39	11	- 3.50
43	22	03/89 RFD	OD (general)	S/N	0.67	HTS-5	+ 1.10
45	47	03/89 RFD	OD (general)	S/N	0.50	15	- 8.30
		03/89 RFD	OD (general)	25 % TW	0.97	13	+ 9.80
45	55	03/89 RFD	OD (general)	19 % TW	1.09	10	-11.00
45	64	03/89 RFD	OD (general)	S/N	1.04	8	- 2.00
		03/89 RFD	OD (general)	19 % TW	1.15	9	+31.20
47	99	03/89 RFD	OD WEAR	84 % TW	2.28	AVB3	
		03/89 RFD	OD WEAR	0 % TW	0.65	AVB4	
48	67	03/89 RFD	OD (general)	42 % TW	0.58	18	+ 1.70
		03/89 RFD	OD (general)	42 % TW	0.57	18	+ 1.70
		03/89 RFD	8x1	45 % TW	2.41	18	+ 1.70
		03/89 RFD	8x1	29 % TW	0.94	18	- 0.40
49	41	03/89 RFD	OD (general)	S/N	0.50	8	- 1.30
49	46	03/89 RFD	OD (general)	19 % TW	0.81	13	+19.00
49	67	03/89 RFD	OD (general)	54 % TW	1.35	18	+ 2.50
		03/89 RFD	OD (general)	51 % TW	1.32	18	+ 1.30
		03/89 RFD	8x1	53 % TW	2.70	18	+ 1.30

TOTAL TUBES FOUND = 40

TOTAL INDICATIONS FOUND = 56

TOTAL TUBES IN INPUT FILE = 4570

TOTAL TUBES INSPECTED = 1522

Plant: CATAWBA UNIT 2

Steam Generator: B

Outage: 03/89 RFO

QUERY: ATTACHMENT 4 TUBES PLUGGED

ROW	COL	OUTAGE	INDICATION	VALUE	VOLTS ELEVATION INCHES
17	90	03/89 RFO	PLUGGED	MECH	CTS-P
21	62	03/89 RFO	PLUGGED	MECH	CTS-P
31	89	03/89 RFO	PLUGGED	MECH	CTS-P
48	67	03/89 RFO	PLUGGED	MECH	CTS-P
49	67	03/89 RFO	PLUGGED	MECH	CTS-P

TOTAL TUBES FOUND = 5

TOTAL INDICATIONS FOUND = 5

TOTAL TUBES IN INPUT FILE = 4570

TOTAL TUBES INSPECTED = 1522



Plant: CATAWBA UNIT 2  
Outage: 02/89 RFD

Start Generator: C

## QUERY: ATTACHMENT 5 INDICATIONS OF IMPERFECTIONS

ROW	COL	OUTAGE	INDICATION	VALUE	VOLTS	ELEVATION	INCHES
3	23	03/89 RFD	DD (general)	S/N	0.78	19	
4	27	03/89 RFD	DD (general)	S/N	0.62	5	+18.40
7	39	03/89 RFD	DD (general)	19 X TW	1.15	4	+ 3.50
8	76	03/89 RFD	DD (general)	S/N	0.64	5	+32.30
10	11	03/89 RFD	DD (general)	S/N	0.87	2	+10.50
12	15	03/89 RFD	DD (general)	S/N	0.55	HTB-5	+ 2.90
14	19	03/89 RFD	DD (general)	S/N	0.36	3	
15	104	03/89 RFD	DD (general)	15 X TW	0.75	11	- 1.70
18	45	03/89 RFD	DD (general)	S/N	0.69	HTB-5	+ 3.10
19	137	03/89 RFD	DD (general)	19 X TW	0.81	7	+20.20
20	29	03/89 RFD	DD (general)	S/N	2.84	10	+ 6.50
20	47	03/89 RFD	DD (general)	S/N	1.17	11	+27.00
22	17	03/89 RFD	DD (general)	S/N	0.79	13	+ 1.20
28	60	03/89 RFD	DD (general)	S/N	0.31	17	- 3.00
31	49	03/89 RFD	DD (general)	S/N	0.65	9	+ 3.90
33	55	03/89 RFD	DD WEAR	7 X TW	0.92	AVB3	
34	66	03/89 RFD	DD (general)	19 X TW	1.10	2	+15.80
35	24	03/89 RFD	DD (general)	S/N	0.58	10	+ 5.00
36	82	03/89 RFD	DD (general)	19 X TW	0.82	9	+ 1.30
38	90	03/89 RFD	DD (general)	19 X TW	1.36	19	+ 4.40
39	96	03/89 RFD	DD (general)	19 X TW	1.62	11	- 2.10
40	90	03/89 RFD	DD (general)	19 X TW	1.02	18	-17.60
41	56	03/89 RFD	DD WEAR	9 X TW	0.61	AVB2	
		03/89 RFD	DD WEAR	10 X TW	0.72	AVB3	
45	24	03/89 RFD	DD WEAR	14 X TW	1.12	AVB3	
45	59	03/89 RFD	DD (general)	S/N	0.98	13	+ 6.50
45	86	03/89 RFD	DD (general)	19 X TW	1.33	AVB3	+ 3.00
48	86	03/89 RFD	DD (general)	19 X TW	1.29	11	+15.60
49	35	03/89 RFD	DD (general)	S/N	0.63	AVB3	+ 4.70
49	39	03/89 RFD	DD (general)	S/N	0.61	5	+ 5.50
49	76	03/89 RFD	DD WEAR	12 X TW	0.73	AVB1	

TOTAL TUBES FOUND = 30

TOTAL INDICATIONS FOUND = 31

TOTAL TUBES IN INPUT FILE = 4570

TOTAL TUBES INSPECTED = 1446

Plant: CATAWBA UNIT 2  
Outage: 03/89 RFO

Steam Generator: D

QUERY: ATTACHMENT 6 TUBES PLUGGED

ROW	COL	OUTAGE	INDICATION	VALUE	VOLTS ELEVATION INCHES
1	5	03/89 RFO	PLUGGED	MECH	CTS-P

TOTAL TUBES FOUND = 1

TOTAL INDICATIONS FOUND = 1

TOTAL TUBES IN INPUT FILE = 4570

TOTAL TUBES INSPECTED = 1446



Plant: COTAWBA UNIT 2  
Outage: 03/89 RFD

Steam Generator: D

QUERY: ATTACHMENT 7 INDICATIONS OF IMPERFECTIONS

ROW	COL	OUTAGE	INDICATION	VALUE	VOLTS	ELEVATION	INCHES
1	32	03/89 RFD	DD (general)	S/N	0.59	13	+20.30
1	66	03/89 RFD	DD (general)	19 % TW	0.77	9	-11.00
2	3	03/89 RFD	DD (general)	S/N	0.89	13	+25.10
3	9	03/89 RFD	DD (general)	19 % TW	0.95	9	-7.20
3	13	03/89 RFD	DD (general)	19 % TW	0.71	16	-4.80
4	54	03/89 RFD	DD (general)	S/N	0.42	5	+33.00
4	68	03/89 RFD	DD (general)	19 % TW	0.80	3	+10.40
5	11	03/89 RFD	DD (general)	S/N	0.40	6	+24.00
5	19	03/89 RFD	DD (general)	S/N	0.94	8	+1.10
6	100	03/89 RFD	DD (general)	S/N	0.53	3	+5.30
		03/89 RFD	DD (general)	S/N	0.46	3	+7.50
7	27	03/89 RFD	DD (general)	S/N	0.40	8	+1.40
7	84	03/89 RFD	DD (general)	S/N	0.77	10	+10.00
8	5	03/89 RFD	DD (general)	S/N	0.64	8	+1.00
9	2	03/89 RFD	DD (general)	S/N	0.78	9	+0.60
10	26	03/89 RFD	DD (general)	S/N	0.32	8	-0.90
		03/89 RFD	DD (general)	S/N	0.84	0	
14	6	03/89 RFD	DD (general)	19 % TW	0.47	5	-3.20
16	53	03/89 RFD	DD (general)	S/N	2.95	13	-8.10
16	62	03/89 RFD	DD (general)	29 % TW	0.67	9	-5.50
18	24	03/89 RFD	DD (general)	S/N	0.31	8	-1.00
19	23	03/89 RFD	DD (general)	S/N	0.43	7	+2.10
21	94	03/89 RFD	DD (general)	S/N	0.57	17	-5.50
24	7	03/89 RFD	DD (general)	S/N	0.37	7	+7.50
24	19	03/89 RFD	DD (general)	19 % TW	0.92	12	-13.30
24	86	03/89 RFD	DD (general)	S/N	0.62	9	-6.00
26	27	03/89 RFD	DD (general)	S/N	0.39	4	+12.10
26	37	03/89 RFD	DD (general)	S/N	0.41	10	+35.90
26	46	03/89 RFD	DD (general)	S/N	0.62	9	-0.20
26	56	03/89 RFD	DD (general)	S/N	0.70	3	-15.40
26	72	03/89 RFD	DD (general)	S/N	0.68	9	-16.30
28	16	03/89 RFD	DD (general)	S/N	0.50	12	+12.20
28	17	03/89 RFD	DD (general)	S/N	0.47	11	+24.20
28	94	03/89 RFD	DD (general)	S/N	0.67	17	+1.80
29	37	03/89 RFD	DD (general)	21 % TW	0.68	10	+21.50
		03/89 RFD	DD (general)	S/N	0.33	3	+12.60
30	41	03/89 RFD	DD (general)	15 % TW	1.06	14	+1.20
30	59	03/89 RFD	DD (general)	S/N	0.44	9	-1.00
30	79	03/89 RFD	DD (general)	S/N	0.55	16	+1.00
31	47	03/89 RFD	DD (general)	19 % TW	1.23	11	+29.10
32	76	03/89 RFD	DD (general)	19 % TW	1.22	8	+14.90
32	86	03/89 RFD	DD (general)	19 % TW	1.54	12	+28.10
		03/89 RFD	DD (general)	19 % TW	0.86	AVB3	+11.60
34	13	03/89 RFD	DD WEAR	10 % TW	0.80	AVB2	
35	14	03/89 RFD	DD WEAR	% TW	0.76	AVB2	
35	94	03/89 RFD	DD (general)	S/N	0.48	3	+16.10
36	16	03/89 RFD	DD WEAR	4 % TW	0.51	AVB2	
36	65	03/89 RFD	DD WEAR	7 % TW	0.70	AVB3	
38	16	03/89 RFD	DD WEAR	6 % TW	0.60	AVB4	
		03/89 RFD	DD WEAR	9 % TW	0.82	AVB3	
38	16	03/89 RFD	DD WEAR	4 % TW	0.53	AVB2	
38	49	03/89 RFD	DD (general)	19 % TW	1.17	10	+6.40
38	73	03/89 RFD	DD (general)	19 % TW	1.12	7	-10.00
38	99	03/89 RFD	DD WEAR	16 % TW	1.12	AVB2	
39	17	03/89 RFD	DD WEAR	4 % TW	0.53	AVB3	
		03/89 RFD	DD WEAR	13 % TW	1.01	AVB2	
39	18	03/89 RFD	DD WEAR	16 % TW	1.13	AVB3	
40	18	03/89 RFD	DD WEAR	18 % TW	1.57	AVB3	
40	97	03/89 RFD	DD (general)	19 % TW	0.35	10	+0.80
41	30	03/89 RFD	DD (general)	S/N	0.46	9	+1.30
41	63	03/89 RFD	DD (general)	S/N	0.83	AVB1	+10.00
41	88	03/89 RFD	DD (general)	19 % TW	0.66	8	+1.70
41	89	03/89 RFD	DD (general)	31 % TW	0.55	8	+1.70
41	90	03/89 RFD	DD (general)	37 % TW	0.80	8	+1.40
42	22	03/89 RFD	DD WEAR	7 % TW	0.57	AVB3	
		03/89 RFD	DD WEAR	7 % TW	0.53	AVB4	
44	23	03/89 RFD	DD WEAR	7 % TW	0.66	AVB2	

Plant: CATAWBA UNIT 2  
Outage: 03/83 RFD

Steam Generator: 3

QUERY: ATTACHMENT 7 INDICATIONS OF IMPERFECTIONS

ROW	COL	OUTAGE	INDICATION	VALUE	VOLTS	ELEVATION	INCHES
44	85	03/89 RFD	OD WEAR	6 % TW	0.55	AVB4	
45	85	03/89 RFD	OD (general)	S/N	0.37	8	+ 2.30
45	84	03/89 RFD	OD (general)	S/N	0.66	15	- 5.30
45	73	03/89 RFD	OD (general)	25 % TW	0.59	13	+27.50
45	91	03/89 RFD	OD (general)	S/N	0.62	9	+ 3.30
46	63	03/89 RFD	OD (general)	S/N	1.01	AVB2	+ 8.00
46	68	03/89 RFD	OD (general)	S/N	0.64	AVB2	- 6.70
46	78	03/89 RFD	OD WEAR	12 % TW	1.12	AVB4	
48	41	03/89 RFD	OD (general)	S/N	0.65	9	+ 1.00
49	51	03/89 RFD	OD (general)	25 % TW	0.62	11	+19.10

TOTAL TUBES FOUND = 69

TOTAL INDICATIONS FOUND = 77

TOTAL TUBES IN INPUT FILE = 4570

TOTAL TUBES INSPECTED = 1542

# **Steam Generator Inspection Reports** **Definition of Terms and or abbreviations**

Row	=	Row location of the tube
Col	=	Column location of the tube
Outage	=	Inspection outage
Indication	=	Type of imperfection or type of repair made to the tube
Value	=	Imperfection percent thru wall penetration or type of plug installed
Volts	=	Measure of the amplitude of the imperfection
Elevation	=	The location of the imperfection referenced to the listed tube support plate or steam generator structure, or location of the plug
Inches	=	The location of the imperfection in inches from the elevation
OD (General)	=	Outside diameter imperfection of the tube
OD Wear	=	Outside diameter wear type imperfection of the tube
OD SCC	=	Outside diameter stress corrosion cracking type imperfection of the tube
Pri Crack	=	Inside diameter primary water stress corrosion cracking type imperfection of the tube
ID (General)	=	Inside diameter imperfection of the tube
8X1	=	Supplemental rotating pancake coil eddy current inspection
TW	=	Thru-wall penetration of the imperfection
S/N	=	Signal to noise ratio to small to reliability size
A/VB	=	Anti-vibration bar
HTS-P	=	Hot leg tubesheet primary face
HTS-S	=	Hot leg tubesheet secondary face
CTS-P	=	Cold leg tubesheet primary face
CTS-S	=	Cold leg tubesheet secondary face
Mech	=	Mechanical plug