

DUKE POWER COMPANY

P.O. BOX 33189

CHARLOTTE, N.C. 28242

HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

TELEPHONE  
(704) 373-4531

February 20, 1984

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Ms. E. G. Adensam, Chief  
Licensing Branch No. 4

Re: Catawba Nuclear Station  
Docket Nos. 50-413 and 50-414

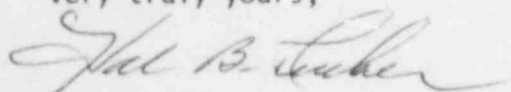
Dear Mr. Denton:

During October 1983 the NRC issued a Safety Evaluation Report related to the proposed modification of Westinghouse Model D4/D5/E Steam Generators (NUREG-1014). This SER concluded that the proposed modification was acceptable pending plant-specific verification and that the modified steam generators could be operated at 100 percent of their design capacity.

The purpose of this letter is to advise the NRC of Duke Power Company's plans to perform this approved modification on the Catawba Unit 2 Model D5 steam generators and to provide the plant-specific details required by NUREG-1014. The attached report addresses these items.

As described in my letter of May 18, 1983, the modification to the Catawba Unit 1 Model D3 Steam Generators has been completed prior to the anticipated fuel loading date of May 1, 1984.

Very truly yours,



Hal B. Tucker

ROS/php

Attachment

cc: Mr. James P. O'Reilly, Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30303

NRC Resident Inspector  
Catawba Nuclear Station

Palmetto Alliance  
2135 1/2 Devine Street  
Columbia, South Carolina 29205

8402220564 840220  
PDR ADOCK 05000413  
A PDR

*13001  
1/1*

Mr. Harold R. Denton, Director  
February 20, 1984  
Page 2

cc: Mr. Robert Guild, Esq.  
Attorney-at-Law  
P. O. Box 12097  
Charleston, South Carolina 29412

Mr. Jesse L. Riley  
Carolina Environmental Study Group  
854 Henley Place  
Charlotte, North Carolina 28207

Duke Power Company  
Catawba Nuclear Station  
Unit 2 Steam Generator Modification

## 1.0 INTRODUCTION

The purpose of this report is to outline the plant-specific details relative to the Catawba Unit 2 Model D5 steam generator modification.

During October, 1983, the NRC issued the Safety Evaluation Report for the proposed modification to Westinghouse Model D4/D5/E steam generators (NUREG-1014). This SER is generically applicable to all nuclear units with counterflow steam generators since it approves the modifications common to all plants while emphasizing that the extent of these modifications depends on the number of loops and the specific model of steam generator. Catawba Unit 2 is a four-loop plant with Model D5 steam generators. Therefore the modification for Catawba Unit 2 consists of tube expansion for 124 tubes per steam generator and diversion of 10% main feedwater flow to the auxiliary feedwater nozzle.

The piping changes for feedwater flow diversion consist of the addition of an orifice in the main feedwater pipe to increase flow resistance downstream of the new auxiliary feedwater bypass connection (see attached figures). A path for reverse flushing of the feedwater line was also added for compatibility with the Unit 1 changes as shown by the 1" dashed lines. Appropriate logic and alarms will be added to inform the operator of high flow through the main nozzle. Work is nearing completion for this part of the modification with tube expansion scheduled to begin in February, 1984. All work on the modification of the Catawba Unit 2 steam generators will be completed prior to fuel loading.

The Technical Review Committee (TRC) in its report dated July 18, 1983, identified three specific items to be addressed by each utility. These items are as follows:

- 1) Transient analysis margins
- 2) Tube plugging margins
- 3) First cycle inspection interval

As a result of the NRC Staff's review of the TRC report, the following additional requirements were noted in NUREG-1014:

- 1) On a plant specific basis, the minimum wall thickness and plugging criteria for the expanded regions shall be established in accordance with Regulatory Guide 1.121.
- 2) The Staff requires that the basic document for the selection of tubes to be tested and for frequency of testing shall be NUREG-0452. For the lead plant, the first inservice inspection of the steam generator tubes shall be conducted after 6 full-power months and

before 12 full-power months of operation, including a special inspection of the expansion regions in all expanded tubes. For the remaining plants, the first inservice inspection requirements will be based on available data. Future inservice inspections on all plants shall always include the expanded regions in a sample of expanded tubes as a special subset of inspections.

The means by which each of the above items will be implemented on Catawba Unit 2 are described in subsequent sections of this report.

## 2.0 Transient Analysis Margins

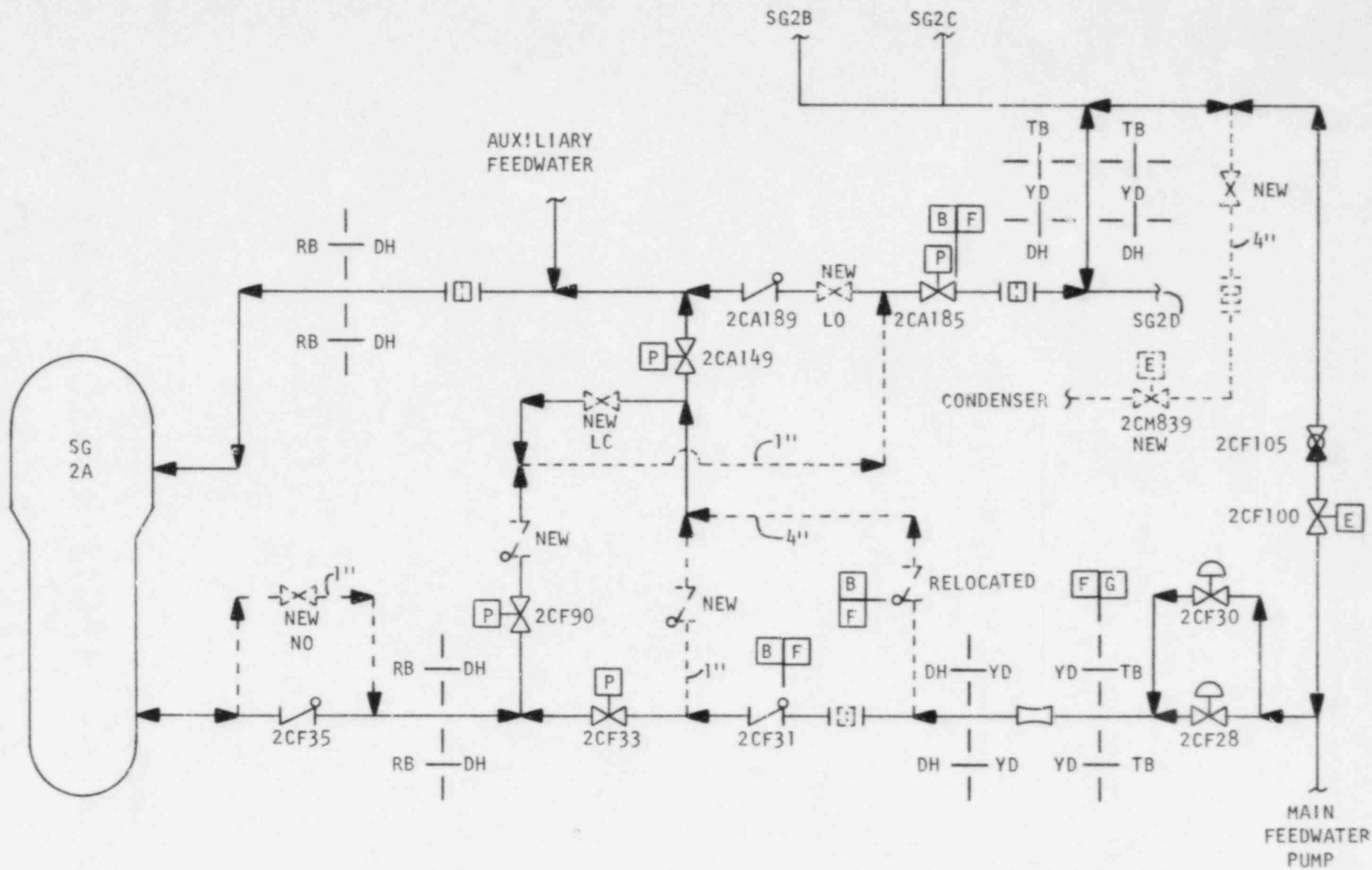
As a result of the 10% flow diversion to the auxiliary feedwater nozzle, the average temperature of the primary coolant will be increased by approximately 0.6°F to maintain the original steam pressure. This is not expected to have any impact on the current Chapter 15 analyses but may require documentation in Chapter 5. Westinghouse is currently investigating the transient analysis margins for Catawba Unit 2 and will provide an update to the FSAR in the near future.

## 3.0 Tube Plugging Margins

The acceptance criteria for tubes following inservice inspection at Catawba Unit 2 are summarized in the Catawba Unit 2 Technical Specifications. These minimum wall thickness and plugging criteria apply to the expanded tubes and are based on Regulatory Guide 1.121.

## 4.0 Inservice Inspection

Based on current schedules, Catawba Unit 2 will not be the lead plant for the Model D5 modification. Therefore, the requirement that the lead plant shut down for tube inspection during its first cycle of full-power operation will not apply to Catawba Unit 2. The frequency of inservice inspection and the selection of tube to be tested will be based on NUREG-0452. Catawba Unit 2 steam generator inspections will always include samples of expanded tubes as a special subset of inspections.



REV	DATE	REV	DATE	REV	DATE
1	10/12/01	2	10/12/01	3	10/12/01
4	10/12/01	5	10/12/01	6	10/12/01
7	10/12/01	8	10/12/01	9	10/12/01
10	10/12/01	11	10/12/01	12	10/12/01
13	10/12/01	14	10/12/01	15	10/12/01
16	10/12/01	17	10/12/01	18	10/12/01
19	10/12/01	20	10/12/01	21	10/12/01
22	10/12/01	23	10/12/01	24	10/12/01
25	10/12/01	26	10/12/01	27	10/12/01
28	10/12/01	29	10/12/01	30	10/12/01
31	10/12/01	32	10/12/01	33	10/12/01
34	10/12/01	35	10/12/01	36	10/12/01
37	10/12/01	38	10/12/01	39	10/12/01
40	10/12/01	41	10/12/01	42	10/12/01
43	10/12/01	44	10/12/01	45	10/12/01
46	10/12/01	47	10/12/01	48	10/12/01
49	10/12/01	50	10/12/01	51	10/12/01
52	10/12/01	53	10/12/01	54	10/12/01
55	10/12/01	56	10/12/01	57	10/12/01
58	10/12/01	59	10/12/01	60	10/12/01
61	10/12/01	62	10/12/01	63	10/12/01
64	10/12/01	65	10/12/01	66	10/12/01
67	10/12/01	68	10/12/01	69	10/12/01
70	10/12/01	71	10/12/01	72	10/12/01
73	10/12/01	74	10/12/01	75	10/12/01
76	10/12/01	77	10/12/01	78	10/12/01
79	10/12/01	80	10/12/01	81	10/12/01
82	10/12/01	83	10/12/01	84	10/12/01
85	10/12/01	86	10/12/01	87	10/12/01
88	10/12/01	89	10/12/01	90	10/12/01
91	10/12/01	92	10/12/01	93	10/12/01
94	10/12/01	95	10/12/01	96	10/12/01
97	10/12/01	98	10/12/01	99	10/12/01
100	10/12/01	101	10/12/01	102	10/12/01
103	10/12/01	104	10/12/01	105	10/12/01
106	10/12/01	107	10/12/01	108	10/12/01
109	10/12/01	110	10/12/01	111	10/12/01
112	10/12/01	113	10/12/01	114	10/12/01
115	10/12/01	116	10/12/01	117	10/12/01
118	10/12/01	119	10/12/01	120	10/12/01
121	10/12/01	122	10/12/01	123	10/12/01
124	10/12/01	125	10/12/01	126	10/12/01
127	10/12/01	128	10/12/01	129	10/12/01
130	10/12/01	131	10/12/01	132	10/12/01
133	10/12/01	134	10/12/01	135	10/12/01
136	10/12/01	137	10/12/01	138	10/12/01
139	10/12/01	140	10/12/01	141	10/12/01
142	10/12/01	143	10/12/01	144	10/12/01
145	10/12/01	146	10/12/01	147	10/12/01
148	10/12/01	149	10/12/01	150	10/12/01
151	10/12/01	152	10/12/01	153	10/12/01
154	10/12/01	155	10/12/01	156	10/12/01
157	10/12/01	158	10/12/01	159	10/12/01
160	10/12/01	161	10/12/01	162	10/12/01
163	10/12/01	164	10/12/01		

C / R STATUS		COMMENTS	DATE
1	1		
2	2		
3	3		
4	4		
5	5		
6	6		
7	7		
8	8		
9	9		
10	10		
11	11		
12	12		
13	13		
14	14		
15	15		
16	16		
17	17		
18	18		
19	19		
20	20		
21	21		
22	22		
23	23		
24	24		
25	25		
26	26		
27	27		
28	28		
29	29		
30	30		
31	31		
32	32		
33	33		
34	34		
35	35		
36	36		
37	37		
38	38		
39	39		
40	40		
41	41		
42	42		
43	43		
44	44		
45	45		
46	46		
47	47		
48	48		
49	49		
50	50		
51	51		
52	52		
53	53		
54	54		
55	55		
56	56		
57	57		
58	58		
59	59		
60	60		
61	61		
62	62		
63	63		
64	64		
65	65		
66	66		
67	67		
68	68		
69	69		
70	70		
71	71		
72	72		
73	73		
74	74		
75	75		
76	76		
77	77		
78	78		
79	79		
80	80		
81	81		
82	82		
83	83		
84	84		
85	85		
86	86		
87	87		
88	88		
89	89		
90	90		
91	91		
92	92		
93	93		
94	94		
95	95		
96	96		
97	97		
98	98		
99	99		
100	100		

BILL OF MATERIALS			REVISION	CODE
ITEM	QTY	SIZE		
1				
2	1	1/2"	ITEM 13 1/2" DIA. 1/2" THK. 1/2" DIA.	
3	1	1/2"	ITEM 14 1/2" DIA. 1/2" THK. 1/2" DIA.	
4				
5	1	1/2"	ITEM 15 1/2" DIA. 1/2" THK. 1/2" DIA.	

INTERMEDIATE BUTTWELD & SOCKETWELD  
FULL COUPLING LOCATIONS MUST BE  
GIVEN FOR ALL PIPES

[illegible][illegible]

CONFIDENTIAL

16	18	PIPE 15' 2" DIA. 10' 1/2" SCH 40	
17	18	90 ELB. 1" DIA. 15' 42" DIA. 10' 1/2" SCH 40	
18		SCH 40	
19	1	PIPE 15' 2" DIA. 10' 1/2" SCH 40	PIPE 15' 2" DIA. 10' 1/2" SCH 40
20	1	PIPE 15' 2" DIA. 10' 1/2" SCH 40	PIPE 15' 2" DIA. 10' 1/2" SCH 40
21	1	PIPE 15' 2" DIA. 10' 1/2" SCH 40	PIPE 15' 2" DIA. 10' 1/2" SCH 40
22	5	PIPE 15' 2" DIA. 10' 1/2" SCH 40	PIPE 15' 2" DIA. 10' 1/2" SCH 40
23	2	PIPE 15' 2" DIA. 10' 1/2" SCH 40	PIPE 15' 2" DIA. 10' 1/2" SCH 40
24	10	PIPE 15' 2" DIA. 10' 1/2" SCH 40	PIPE 15' 2" DIA. 10' 1/2" SCH 40
25	18	PIPE 15' 2" DIA. 10' 1/2" SCH 40	PIPE 15' 2" DIA. 10' 1/2" SCH 40
26			
27			
28			
29			
30			
31			
32			

181

MA. No.	SPECIALS
33	
34	1. APPLE 12. 12/20/58 JMS. POC/100 0398128600
35	2. BLOOD 10. SPECTRA YELLOWING DOORS 0398128600
36	3. SLES POL 4 (BY GREEN-BELL)
37	4. SWEET POLLET CS NW A10/58/10 0398128600
38	10000
39	1. APPLE 12. 12/20/58 JMS. POC/100 0398128600
40	
41	
42	
43	

[illegible]

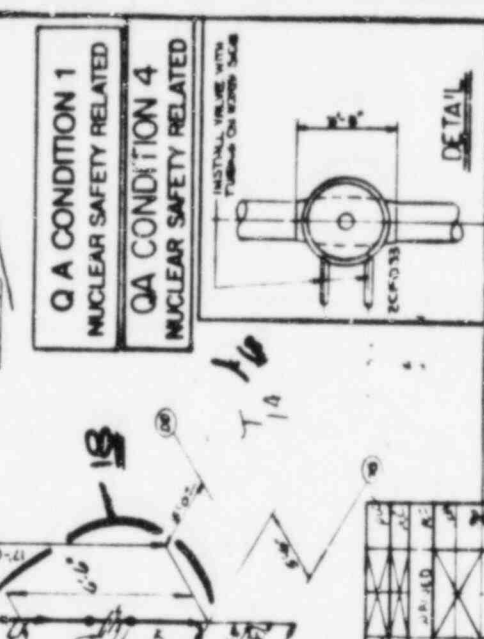
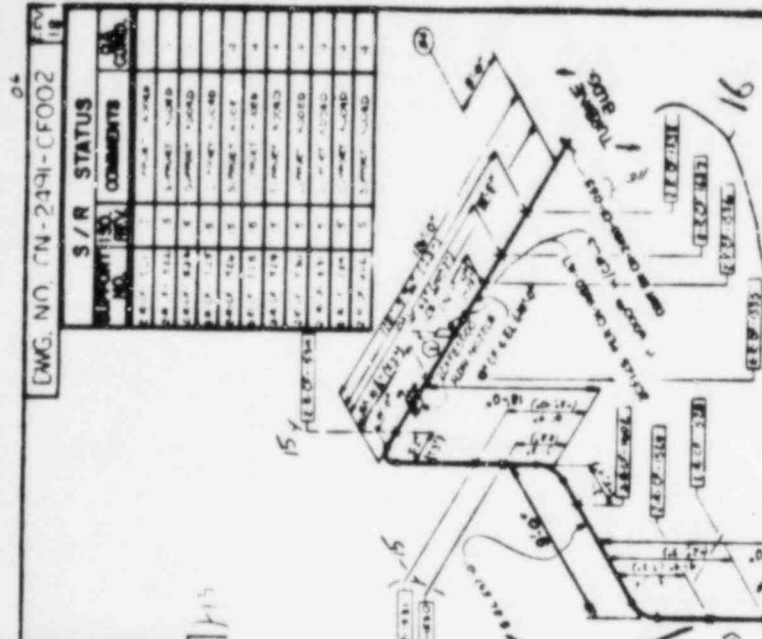
13	ADDED INTERPRETATION
12	REVISED PAGE
11	REVISED AS N
10	REVISED AS N
9	REVISED AS N

VALVE LIST		PIPE SPEC.	
SIZE IN	TYPE	SIZE	
1/2"	1/2"	1/2"	
3/4"	3/4"	3/4"	
1"	1"	1"	
1 1/2"	1 1/2"	1 1/2"	
2"	2"	2"	
2 1/2"	2 1/2"	2 1/2"	
3"	3"	3"	
3 1/2"	3 1/2"	3 1/2"	
4"	4"	4"	
4 1/2"	4 1/2"	4 1/2"	
5"	5"	5"	
5 1/2"	5 1/2"	5 1/2"	
6"	6"	6"	
6 1/2"	6 1/2"	6 1/2"	
7"	7"	7"	
7 1/2"	7 1/2"	7 1/2"	
8"	8"	8"	
8 1/2"	8 1/2"	8 1/2"	
9"	9"	9"	
9 1/2"	9 1/2"	9 1/2"	
10"	10"	10"	
10 1/2"	10 1/2"	10 1/2"	
11"	11"	11"	
11 1/2"	11 1/2"	11 1/2"	
12"	12"	12"	
12 1/2"	12 1/2"	12 1/2"	
13"	13"	13"	
13 1/2"	13 1/2"	13 1/2"	
14"	14"	14"	
14 1/2"	14 1/2"	14 1/2"	
15"	15"	15"	
15 1/2"	15 1/2"	15 1/2"	
16"	16"	16"	
16 1/2"	16 1/2"	16 1/2"	
17"	17"	17"	
17 1/2"	17 1/2"	17 1/2"	
18"	18"	18"	
18 1/2"	18 1/2"	18 1/2"	
19"	19"	19"	
19 1/2"	19 1/2"	19 1/2"	
20"	20"	20"	
20 1/2"	20 1/2"	20 1/2"	
21"	21"	21"	
21 1/2"	21 1/2"	21 1/2"	
22"	22"	22"	
22 1/2"	22 1/2"	22 1/2"	
23"	23"	23"	
23 1/2"	23 1/2"	23 1/2"	
24"	24"	24"	
24 1/2"	24 1/2"	24 1/2"	
25"	25"	25"	
25 1/2"	25 1/2"	25 1/2"	
26"	26"	26"	
26 1/2"	26 1/2"	26 1/2"	
27"	27"	27"	
27 1/2"	27 1/2"	27 1/2"	
28"	28"	28"	
28 1/2"	28 1/2"	28 1/2"	
29"	29"	29"	
29 1/2"	29 1/2"	29 1/2"	
30"	30"	30"	
30 1/2"	30 1/2"	30 1/2"	
31"	31"	31"	
31 1/2"	31 1/2"	31 1/2"	
32"	32"	32"	
32 1/2"	32 1/2"	32 1/2"	
33"	33"	33"	
33 1/2"	33 1/2"	33 1/2"	
34"	34"	34"	
34 1/2"	34 1/2"	34 1/2"	
35"	35"	35"	
35 1/2"	35 1/2"	35 1/2"	
36"	36"	36"	
36 1/2"	36 1/2"	36 1/2"	
37"	37"	37"	
37 1/2"	37 1/2"	37 1/2"	
38"	38"	38"	
38 1/2"	38 1/2"	38 1/2"	
39"	39"	39"	
39 1/2"	39 1/2"	39 1/2"	
40"	40"	40"	
40 1/2"	40 1/2"	40 1/2"	
41"	41"	41"	
41 1/2"	41 1/2"	41 1/2"	
42"	42"	42"	
42 1/2"	42 1/2"	42 1/2"	
43"	43"	43"	
43 1/2"	43 1/2"	43 1/2"	
44"	44"	44"	
44 1/2"	44 1/2"	44 1/2"	
45"	45"	45"	
45 1/2"	45 1/2"	45 1/2"	
46"	46"	46"	
46 1/2"	46 1/2"	46 1/2"	
47"	47"	47"	
47 1/2"	47 1/2"	47 1/2"	
48"	48"	48"	
48 1/2"	48 1/2"	48 1/2"	
49"	49"	49"	
49 1/2"	49 1/2"	49 1/2"	
50"	50"	50"	
50 1/2"	50 1/2"	50 1/2"	
51"	51"	51"	
51 1/2"	51 1/2"	51 1/2"	
52"	52"	52"	
52 1/2"	52 1/2"	52 1/2"	
53"	53"	53"	
53 1/2"	53 1/2"	53 1/2"	
54"	54"	54"	
54 1/2"	54 1/2"	54 1/2"	
55"	55"	55"	
55 1/2"	55 1/2"	55 1/2"	
56"	56"	56"	
56 1/2"	56 1/2"	56 1/2"	
57"	57"	57"	
57 1/2"	57 1/2"	57 1/2"	
58"	58"	58"	
58 1/2"	58 1/2"	58 1/2"	
59"	59"	59"	
59 1/2"	59 1/2"	59 1/2"	
60"	60"	60"	
60 1/2"	60 1/2"	60 1/2"	
61"	61"	61"	
61 1/2"	61 1/2"	61 1/2"	
62"	62"	62"	
62 1/2"	62 1/2"	62 1/2"	
63"	63"	63"	
63 1/2"	63 1/2"	63 1/2"	
64"	64"	64"	
64 1/2"	64 1/2"	64 1/2"	
65"	65"	65"	
65 1/2"	65 1/2"	65 1/2"	
66"	66"	66"	
66 1/2"	66 1/2"	66 1/2"	
67"	67"	67"	
67 1/2"	67 1/2"	67 1/2"	
68"	68"	68"	
68 1/2"	68 1/2"	68 1/2"	
69"	69"	69"	
69 1/2"	69 1/2"	69 1/2"	
70"	70"	70"	
70 1/2"	70 1/2"	70 1/2"	
71"	71"	71"	
71 1/2"	71 1/2"	71 1/2"	
72"	72"	72"	
72 1/2"	72 1/2"	72 1/2"	
73"	73"	73"	
73 1/2"	73 1/2"	73 1/2"	
74"	74"	74"	
74 1/2"	74 1/2"	74 1/2"	
75"	75"	75"	
75 1/2"	75 1/2"	75 1/2"	
76"	76"	76"	
76 1/2"	76 1/2"	76 1/2"	
77"	77"	77"	
77 1/2"	77 1/2"	77 1/2"	
78"	78"	78"	
78 1/2"	78 1/2"	78 1/2"	
79"	79"	79"	
79 1/2"	79 1/2"	79 1/2"	
80"	80"	80"	
80 1/2"	80 1/2"	80 1/2"	
81"	81"	81"	
81 1/2"	81 1/2"	81 1/2"	
82"	82"	82"	
82 1/2"	82 1/2"	82 1/2"	
83"	83"	83"	
83 1/2"	83 1/2"	83 1/2"	
84"	84"	84"	
84 1/2"	84 1/2"	84 1/2"	
85"	85"	85"	
85 1/2"	85 1/2"	85 1/2"	
86"	86"	86"	
86 1/2"	86 1/2"	86 1/2"	
87"	87"	87"	
87 1/2"	87 1/2"	87 1/2"	
88"	88"	88"	
88 1/2"	88 1/2"	88 1/2"	
89"	89"	89"	
89 1/2"	89 1/2"	89 1/2"	
90"	90"	90"	
90 1/2"	90 1/2"	90 1/2"	
91"	91"	91"	
91 1/2"	91 1/2"	91 1/2"	
92"	92"	92"	
92 1/2"	92 1/2"	92 1/2"	
93"	93"	93"	
93 1/2"	93 1/2"	93 1/2"	
94"	94"	94"	
94 1/2"	94 1/2"	94 1/2"	
95"	95"	95"	
95 1/2"	95 1/2"	95 1/2"	
96"	96"	96"	
96 1/2"	96 1/2"	96 1/2"	
97"	97"	97"	
97 1/2"	97 1/2"	97 1/2"	
98"	98"	98"	
98 1/2"	98 1/2"	98 1/2"	
99"	99"	99"	
99 1/2"	99 1/2"	99 1/2"	
100"	100"	100"	
100 1/2"	100 1/2"	100 1/2"	
101"	101"	101"	
101 1/2"	101 1/2"	101 1/2"	
102"	102"	102"	
102 1/2"	102 1/2"	102 1/2"	
103"	103"	103"	
103 1/2"	103 1/2"	103 1/2"	
104"	104"	104"	
104 1/2"	104 1/2"	104 1/2"	
105"	105"	105"	
105 1/2"	105 1/2"	105 1/2"	
106"	106"	106"	
106 1/2"	106 1/2"	106 1/2"	
107"	107"	107"	
107 1/2"	107 1/2"	107 1/2"	
108"	108"	108"	
108 1/2"	108 1/2"	108 1/2"	
109"	109"	109"	
109 1/2"	109 1/2"	109 1/2"	
110"	110"	110"	
110 1/2"	110 1/2"	110 1/2"	
111"	111"	111"	
111 1/2"	111 1/2"	111 1/2"	
112"	112"	112"	
112 1/2"	112 1/2"	112 1/2"	
113"	113"	113"	
113 1/2"	113 1/2"	113 1/2"	
114"	114"	114"	
114 1/2"	114 1/2"	114 1/2"	
115"	115"	115"	
115 1/2"	115 1/2"	115 1/2"	
116"	116"	116"	
116 1/2"	116 1/2"	116 1/2"	
117"	117"	117"	
117 1/2"	117 1/2"	117 1/2"	
118"	118"	118"	
118 1/2"	118 1/2"	118 1/2"	
119"	119"	119"	
119 1/2"	119 1/2"	119 1/2"	
120"	120"	120"	
120 1/2"	120 1/2"	120 1/2"	
121"	121"	121"	
121 1/2"	121 1/2"	121 1/2"	
122"	122"	122"	
122 1/2"	122 1/2"	122 1/2"	
123"	123"	123"	
123 1/2"	123 1/2"	123 1/2"	
124"	124"	124"	
124 1/2"	124 1/2"	124 1/2"	
125"	125"	125"	
125 1/2"	125 1/2"	125 1/2"	
126"	126"	126"	
126 1/2"	126 1/2"	126 1/2"	
127"	127"	127"	
127 1/2"	127 1/2"	127 1/2"	
128"	128"	128"	
128 1/2"	128 1/2"	128 1/2"	
129"	129"	129"	
129 1/2"	129 1/2"	129 1/2"	
130"	130"	130"	
130 1/2"	130 1/2"	130 1/2"	
131"	131"	131"	
131 1/2"	131 1/2"	131 1/2"	
132"	132"	132"	
132 1/2"	132 1/2"	132 1/2"	
133"	133"	133"	
133 1/2"	133 1/2"	133 1/2"	
134"	134"	134"	
134 1/2"	134 1/2"	134 1/2"	
135"	135"	135"	
135 1/2"	135 1/2"	135 1/2"	
136"	136"	136"	
136 1/2"	136 1/2"	136 1/2"	
137"	137"	137"	
137 1/2"	137 1/2"	137 1/2"	
138"	138"	138"	
138 1/2"	138 1/2"	138 1/2"	
139"	139"	139"	
139 1/2"	139 1/2"	139 1/2"	
140"	140"	140"	
140 1/2"	140 1/2"	140 1/2"	
141"	141"	141"	
141 1/2"	141 1/2"	141 1/2"	
142"	142"	142"	
142 1/2"	142 1/2"	142 1/2"	
143"	143"	143"	
143 1/2"	143 1/2"	143 1/2"	
144"	144"	144"	
144 1/2"	144 1/2"	144 1/2"	
145"	145"	145"	
145 1/2"	145 1/2"	145 1/2"	
146"	146"	146"	
146 1/2"	146 1/2"	146 1/2"	
147"	147"	147"	
147 1/2"	147 1/2"	147 1/2"	
148"	148"	148"	
148 1/2"	148 1/2"	148 1/2"	
149"	149"	149"	
149 1/2"	149 1/2"	149 1/2"	
150"	150"	150"	
150 1/2"	150 1/2"	150 1/2"	
151"	151"	151"	
151 1/2"	151 1/2"	151 1/2"	
152"	152"	152"	
152 1/2"	152 1/2"	152 1/2"	
153"	153"	153"	
153 1/2"	153 1/2"	153 1/2"	
154"	154"	154"	
154 1/2"	154 1/2"	154 1/2"	
155"	155"	155"	
155 1/2"	155 1/2"	155 1/2"	
156"	156"	156"	
156 1/2"	156 1/2"	156 1/2"	
157"	157"	157"	
157 1/2"	157 1/2"	157 1/2"	
158"	158"	158"	
158 1/2"	158 1/2"	158 1/2"	
159"	159"	159"	
159 1/2"	159 1/2"	159 1/2"	
160"	160"	160"	
160 1/2"	160 1/2"	160 1/2"	
161"	161"	161"	
161 1/2"	161 1/2"	161 1/2"	
162"	162"	162"	
162 1/2"	162 1/2"	162 1/2"	
163"	163"	163"	
163 1/2"	163 1/2"	163 1/2"	
164"	164"	164"	
164 1/2"	164 1/2"	164 1/2"	
165"	165"	165"	
165 1/2"	165 1/2"	165 1/2"	
166"	166"	166"	
166 1/2"	166 1/2"	166 1/2"	
167"	167"	167"	
167 1/2"	167 1/2"	167 1/2"	
168"	168"	168"	
168 1/2"	168 1/2"	168 1/2"	
169"	169"	169"	
169 1/2"	169 1/2"	169 1/2"	
170"	170"	170"	
170 1/2"	170 1/2"	170 1/2"	

NAME	AGE	SEX	RELATION
JOHN	20	M	SON
MARY	18	F	DAUGHTER
JOHN	15	M	SON
MARY	12	F	DAUGHTER
JOHN	10	M	SON
MARY	8	F	DAUGHTER
JOHN	6	M	SON
MARY	4	F	DAUGHTER
JOHN	2	M	SON
MARY	1	F	DAUGHTER

[illegible]

2. Supply named On Certificate Drawing  
 2. N.P. 25/4 25/2 from 1986 25/4/1986



QA CONDITION 1 NUCLEAR SAFETY RELATED	QA CONDITION 4 NUCLEAR SAFETY RELATED

INSTALL FLANGE WITH FLANGE ON INSIDE SURF

DETAIL

PCF-033

[illegible][illegible]

NAME	AGE	SEX	RELATION
JOHN	20	M	SON
MARY	18	F	DAUGHTER
JOHN	15	M	SON
MARY	12	F	DAUGHTER
JOHN	10	M	SON
MARY	8	F	DAUGHTER
JOHN	6	M	SON
MARY	4	F	DAUGHTER
JOHN	2	M	SON
MARY	1	F	DAUGHTER

[illegible]

1. Spring round on Cigarette Drawing  
of old man 25 x 40 cm. 1946. 1946. 1946.



