Entergy

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Otto W. Gustafson
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PNP 2014-029

March 06, 2014

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

SUBJECT: Response to Third Request for Additional Information dated March 5, 2014, for Relief Request Number RR 4-18 – Proposed Alternative, Use of Alternate ASME Code Case N-770-1 Baseline Examination

Palisades Nuclear Plant
Docket 50-255
License No. DPR-20

References:

1. Entergy Nuclear Operations, Inc. letter PNP 2014-015, *Relief Request Number RR 4-18 - Proposed Alternative, Use of Alternate ASME Code Case N-770-1 Baseline Examination*, dated February 25, 2014

2. NRC Electronic Mail, *Request for Additional Information - Palisades - RR 4-18 - Proposed Alternative, Use of Alternate ASME Code Case N-770-1 Baseline Examination - MF3508*, dated February 26, 2014

3. Entergy Nuclear Operations, Inc. letter PNP 2014-021, *Response to Request for Additional Information dated February 26, 2014, for Relief Request Number RR 4-18 – Proposed Alternative, Use of Alternate ASME Code Case N-770-1 Baseline Examination,* dated March 01, 2014

4. NRC Electronic Mail, *Palisades - RR 4-18 - 2nd Set of RAI's TAC No. MF3508*, dated February 27, 2014

5. Entergy Nuclear Operations, Inc. letter PNP 2014-022, *Response to Second Request for Additional Information dated February 27, 2014, for Relief Request Number RR 4-18 – Proposed Alternative, Use of Alternate ASME Code Case N-770-1 Baseline Examination,* dated March 4, 2014

6. NRC Electronic Mail, *Request for Additional Information (3rd set) - RR 4-18 - Proposed Alternative, Use of Alternate ASME Code Case N-770-1 Baseline Examination - MF3508,* dated March 5, 2014.

7. Entergy Nuclear Operations, Inc. letter PNP 2014-028, *Supplemental Response to Request for Additional Information dated February 26, 2014, for Relief Request Number RR 4-18 – Proposed Alternative, Use of Alternate ASME Code Case N-770-1 Baseline Examination,* dated March 6, 2014

Sir or Madam:

In Reference 1, Entergy Nuclear Operations, Inc. (ENO) requested Nuclear Regulatory Commission (NRC) approval of the Request for Relief for a Proposed Alternative for the Palisades Nuclear Plant (PNP). NRC approval was requested by March 8, 2014.

Reference 1 is associated with the use of an alternative to the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Code Case N-770-1, as conditioned by 10 CFR 50.55a(g)(6)(ii)(F)(1) and 10 CFR 50.55a(g)(6)(ii)(F)(3), dated June 21, 2011.

In Reference 2, the NRC issued a request for additional information (RAI). ENO responded to the RAI in Reference 3.

In Reference 4, the NRC issued a second RAI. ENO responded to the RAI in Reference 5, as supplemented in Reference 7.

In Reference 6, the NRC issued a third RAI. The ENO response to the third RAI is provided in Attachment 1.

This submittal contains no proprietary information.

Summary of Commitments

This letter withdraws the following commitment made in Reference 5.

> ENO will comply with 10 CFR 50.55a(g)(6)(ii)(F) for the welds identified in Attachment 1, Enclosure Table 1, of Relief Request Number RR 4-18 by the end of the next scheduled refueling outage (1R24).

Sincerely,

owg/jse

Attachment:
1. Response to Third Request for Additional Information dated March 5, 2014, for Relief Request Number RR 4-18 – Proposed Alternative, Use of Alternate ASME Code Case N-770-1 Baseline Examination
2. Palisades Site Specific Mockup Drawings

cc: Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC

ATTACHMENT 1

Response to Third Request for Additional Information dated March 5, 2014, for Relief Request Number RR 4-18 – Proposed Alternative, Use of Alternate ASME Code Case N-770-1 Baseline Examination

By letter dated February 25, 2014, Entergy Nuclear Operations (ENO) requested Nuclear Regulatory Commission (NRC) approval of the Request for Relief for a Proposed Alternative for the Palisades Nuclear Plant (PNP). By electronic mail, dated March 5, 2014, the Nuclear Regulatory Commission (NRC) submitted a third request for additional information. The requested information is provided below.

NRC Information Request – Response to Question RAI-1.14

Provide a detailed discussion of how the post weld heat treatment was physically applied to the welds. What process was physically used to apply the heat treatment to the weld, piping and nozzle?

ENO Response

The post weld heat treatment was applied to the nozzle welds by heating the affected nozzle/weld as part of the hot leg pipe assembly in a furnace. The hot leg drain nozzle (piece number 675-03) was installed into the hot leg pipe (pipe assembly 673-04) by cutting a hole into the hot leg piping and then fitting and welding the hot leg drain nozzle in place using an intermediate heat treat of 1100°F + 50°F for 15 minutes. The backing ring for the weld was removed, the weld was dye penetrant tested, and then back welded. The back weld was dye penetrant tested, and any indications were repaired, and then a final dye penetrant test was performed. The weld was then back clad and dye penetrant tested. Any indications were removed and dye penetrant tested again. The hot leg drain nozzle weld was radiographed and any defects were removed, weld repaired, and then dye penetrant tested and radiographed. The pipe assembly with the hot leg drain nozzle installed was post weld heat treated in a furnace using a post weld heat treat of 1150°F ± 25°F, holding this temperature for one hour/inch thickness of weld.

NRC Information Request – Response to Question RAI-1.15

Provide the thickness of the alloy 182/82 cladding on the inside surface of the welds. For the hot leg weld, confirm that the 21-inch inner pipe radius is from the inside surface of the alloy 182/82 cladding.

ENO Response

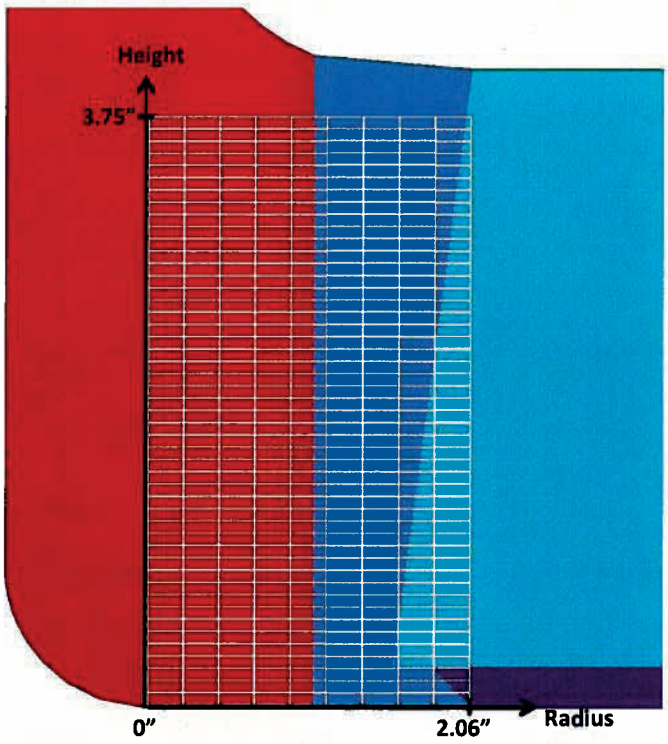
The thickness of the alloy 182/82 cladding on the inside surface of the weld is 1/4 inch nominal thickness with a minimum thickness of 5/32 inch. The inner radius at the hot leg drain is 21.34 inches measured from the inside surface of the cladding to the centerline of the hot leg pipe.

NRC Information Request – Response to Question RAI-1.16

Provide profiles of the weld residual stress through-the-weld that were used in the flaw evaluation for axial flaws. These stress profiles are requested for comparison to the NRC generated stress profiles for this weld configuration. If the licensee did not use specific profiles, explain how the flaw evalution was completed with regard to the stress profile and provide the highest weld residual stress profile through-the-weld from the licensee's evaluation for both axial and circumferential flaw growth.

ENO Response

The stress profile used in the axial flaws is provided in the table below. The format is per the grid layout shown in the figure below.



Hoop Stress Extraction Grid for Axial Crack Growth Evaluation

Hoop Stress Table for Axial Crack Growth Evaluation

[Stress (ksi) for each Radius (inches) and Height (inches)]

Radius	Height	Stress	Radius	Height	Stress	Radius	Height	Stress	Radius	Height	Stress	Radius	Height	Stress	Radius	Height	Stress	Radius	Height	Stress	Radius	Height	Stress	Radius	Height	Stress	Radius	Height	Stress
0.00	0.00	5.62	0.23	0.00	3.69	0.46	0.00	4.16	0.69	0.00	8.09	0.92	0.00	9.95	1.15	0.00	10.75	1.38	0.00	12.98	1.60	0.00	15.19	1.83	0.00	14.37	2.06	0.00	9.40
0.00	0.08	5.55	0.23	0.08	4.66	0.46	0.08	5.20	0.69	0.08	8.69	0.92	0.08	10.91	1.15	0.08	12.29	1.38	0.08	12.10	1.60	0.08	14.16	1.83	0.08	13.51	2.06	0.08	9.08
0.00	0.16	6.02	0.23	0.16	5.17	0.46	0.16	5.64	0.69	0.16	9.20	0.92	0.16	12.36	1.15	0.16	13.63	1.38	0.16	10.22	1.60	0.16	11.75	1.83	0.16	14.82	2.06	0.16	9.61
0.00	0.23	6.49	0.23	0.23	5.74	0.46	0.23	6.12	0.69	0.23	9.85	0.92	0.23	13.57	1.15	0.23	14.01	1.38	0.23	9.36	1.60	0.23	5.26	1.83	0.23	6.79	2.06	0.23	2.36
0.00	0.31	7.03	0.23	0.31	6.46	0.46	0.31	7.01	0.69	0.31	10.71	0.92	0.31	14.05	1.15	0.31	14.66	1.38	0.31	10.77	1.60	0.31	-2.45	1.83	0.31	-4.94	2.06	0.31	-5.80
0.00	0.39	7.72	0.23	0.39	7.25	0.46	0.39	8.15	0.69	0.39	11.35	0.92	0.39	14.03	1.15	0.39	16.58	1.38	0.39	11.99	1.60	0.39	-0.75	1.83	0.39	-4.51	2.06	0.39	-5.71
0.00	0.47	8.51	0.23	0.47	7.98	0.46	0.47	8.51	0.69	0.47	11.45	0.92	0.47	14.06	1.15	0.47	17.97	1.38	0.47	11.84	1.60	0.47	1.33	1.83	0.47	-3.49	2.06	0.47	-4.75
0.00	0.55	9.26	0.23	0.55	7.92	0.46	0.55	7.52	0.69	0.55	10.99	0.92	0.55	14.11	1.15	0.55	15.81	1.38	0.55	11.78	1.60	0.55	3.59	1.83	0.55	-2.67	2.06	0.55	-3.99
0.00	0.63	9.63	0.23	0.63	6.59	0.46	0.63	5.49	0.69	0.63	10.11	0.92	0.63	14.47	1.15	0.63	14.01	1.38	0.63	11.91	1.60	0.63	5.40	1.83	0.63	-2.08	2.06	0.63	-3.35
0.00	0.70	8.78	0.23	0.70	4.16	0.46	0.70	3.47	0.69	0.70	9.97	0.92	0.70	15.81	1.15	0.70	15.79	1.38	0.70	12.53	1.60	0.70	6.46	1.83	0.70	-1.54	2.06	0.70	-2.80
0.00	0.78	6.56	0.23	0.78	1.16	0.46	0.78	1.65	0.69	0.78	10.04	0.92	0.78	17.40	1.15	0.78	17.53	1.38	0.78	14.17	1.60	0.78	7.64	1.83	0.78	-0.88	2.06	0.78	-2.25
0.00	0.86	3.90	0.23	0.86	-1.72	0.46	0.86	0.26	0.69	0.86	10.29	0.92	0.86	18.76	1.15	0.86	18.03	1.38	0.86	15.45	1.60	0.86	8.63	1.83	0.86	-0.13	2.06	0.86	-1.65
0.00	0.94	1.08	0.23	0.94	-4.07	0.46	0.94	-0.95	0.69	0.94	10.67	0.92	0.94	19.70	1.15	0.94	18.39	1.38	0.94	15.70	1.60	0.94	8.93	1.83	0.94	0.63	2.06	0.94	-1.01
0.00	1.02	-1.69	0.23	1.02	-6.27	0.46	1.02	-1.73	0.69	1.02	11.05	0.92	1.02	20.82	1.15	1.02	18.90	1.38	1.02	14.45	1.60	1.02	11.00	1.83	1.02	1.43	2.06	1.02	-0.34
0.00	1.09	-4.26	0.23	1.09	-8.09	0.46	1.09	-2.85	0.69	1.09	11.26	0.92	1.09	21.88	1.15	1.09	18.56	1.38	1.09	15.88	1.60	1.09	13.74	1.83	1.09	2.29	2.06	1.09	0.35
0.00	1.17	-6.41	0.23	1.17	-9.31	0.46	1.17	-3.76	0.69	1.17	11.19	0.92	1.17	21.65	1.15	1.17	18.35	1.38	1.17	16.53	1.60	1.17	14.75	1.83	1.17	3.14	2.06	1.17	1.01
0.00	1.25	-8.04	0.23	1.25	-10.34	0.46	1.25	-4.85	0.69	1.25	11.18	0.92	1.25	21.77	1.15	1.25	19.00	1.38	1.25	14.65	1.60	1.25	14.46	1.83	1.25	3.91	2.06	1.25	1.69
0.00	1.33	-9.31	0.23	1.33	-11.06	0.46	1.33	-5.23	0.69	1.33	11.36	0.92	1.33	22.00	1.15	1.33	18.10	1.38	1.33	13.97	1.60	1.33	15.05	1.83	1.33	4.58	2.06	1.33	2.41
0.00	1.41	-10.24	0.23	1.41	-11.79	0.46	1.41	-5.55	0.69	1.41	11.56	0.92	1.41	21.40	1.15	1.41	17.32	1.38	1.41	12.93	1.60	1.41	15.94	1.83	1.41	5.34	2.06	1.41	3.12
0.00	1.48	-10.86	0.23	1.48	-12.07	0.46	1.48	-5.79	0.69	1.48	10.84	0.92	1.48	20.91	1.15	1.48	17.35	1.38	1.48	12.91	1.60	1.48	16.46	1.83	1.48	6.08	2.06	1.48	3.84
0.00	1.56	-11.18	0.23	1.56	-12.35	0.46	1.56	-5.85	0.69	1.56	10.43	0.92	1.56	20.85	1.15	1.56	17.69	1.38	1.56	13.32	1.60	1.56	16.76	1.83	1.56	6.57	2.06	1.56	4.56
0.00	1.64	-11.21	0.23	1.64	-12.38	0.46	1.64	-6.38	0.69	1.64	10.62	0.92	1.64	21.10	1.15	1.64	18.23	1.38	1.64	12.96	1.60	1.64	17.41	1.83	1.64	7.29	2.06	1.64	5.27
0.00	1.72	-11.08	0.23	1.72	-12.14	0.46	1.72	-6.45	0.69	1.72	10.70	0.92	1.72	21.46	1.15	1.72	18.66	1.38	1.72	14.20	1.60	1.72	18.30	1.83	1.72	7.96	2.06	1.72	5.99
0.00	1.80	-10.81	0.23	1.80	-11.86	0.46	1.80	-6.22	0.69	1.80	10.96	0.92	1.80	21.76	1.15	1.80	19.61	1.38	1.80	14.60	1.60	1.80	19.20	1.83	1.80	8.65	2.06	1.80	6.70
0.00	1.88	-10.42	0.23	1.88	-11.48	0.46	1.88	-6.26	0.69	1.88	11.30	0.92	1.88	22.40	1.15	1.88	20.66	1.38	1.88	15.54	1.60	1.88	20.13	1.83	1.88	10.32	2.06	1.88	7.42
0.00	1.95	-9.94	0.23	1.95	-11.05	0.46	1.95	-5.92	0.69	1.95	11.93	0.92	1.95	23.17	1.15	1.95	21.83	1.38	1.95	16.85	1.60	1.95	21.07	1.83	1.95	11.32	2.06	1.95	8.14
0.00	2.03	-9.50	0.23	2.03	-10.60	0.46	2.03	-5.60	0.69	2.03	12.75	0.92	2.03	24.05	1.15	2.03	23.25	1.38	2.03	17.65	1.60	2.03	21.70	1.83	2.03	12.95	2.06	2.03	8.84
0.00	2.11	-8.95	0.23	2.11	-10.11	0.46	2.11	-5.12	0.69	2.11	13.60	0.92	2.11	25.20	1.15	2.11	24.82	1.38	2.11	19.15	1.60	2.11	22.36	1.83	2.11	14.71	2.06	2.11	9.53
0.00	2.19	-8.36	0.23	2.19	-9.53	0.46	2.19	-4.45	0.69	2.19	14.68	0.92	2.19	26.44	1.15	2.19	26.61	1.38	2.19	20.44	1.60	2.19	23.41	1.83	2.19	15.64	2.06	2.19	10.22
0.00	2.27	-7.70	0.23	2.27	-8.87	0.46	2.27	-3.94	0.69	2.27	15.80	0.92	2.27	27.94	1.15	2.27	29.42	1.38	2.27	23.79	1.60	2.27	25.07	1.83	2.27	18.24	2.06	2.27	10.96
0.00	2.34	-6.97	0.23	2.34	-8.18	0.46	2.34	-3.26	0.69	2.34	16.90	0.92	2.34	29.53	1.15	2.34	32.47	1.38	2.34	29.09	1.60	2.34	25.60	1.83	2.34	19.32	2.06	2.34	11.73

0.00	2.42	-6.16	0.23	2.42	-7.39	0.46	2.42	-2.49	0.69	2.42	17.78	0.92	2.42	30.57	1.15	2.42	30.17	1.38	2.42	23.94	1.60	2.42	18.19	1.83	2.42	20.36	2.06	2.42	12.61
0.00	2.50	-5.30	0.23	2.50	-6.54	0.46	2.50	-1.87	0.69	2.50	18.47	0.92	2.50	30.00	1.15	2.50	28.49	1.38	2.50	23.99	1.60	2.50	20.82	1.83	2.50	21.46	2.06	2.50	13.80
0.00	2.58	-4.35	0.23	2.58	-5.62	0.46	2.58	-0.98	0.69	2.58	19.16	0.92	2.58	29.53	1.15	2.58	29.19	1.38	2.58	30.19	1.60	2.58	26.15	1.83	2.58	23.15	2.06	2.58	15.46
0.00	2.66	-3.41	0.23	2.66	-4.62	0.46	2.66	-0.19	0.69	2.66	20.35	0.92	2.66	29.88	1.15	2.66	29.78	1.38	2.66	32.03	1.60	2.66	26.87	1.83	2.66	24.98	2.06	2.66	16.86
0.00	2.73	-2.42	0.23	2.73	-3.53	0.46	2.73	0.72	0.69	2.73	20.66	0.92	2.73	30.12	1.15	2.73	30.83	1.38	2.73	33.97	1.60	2.73	29.07	1.83	2.73	25.62	2.06	2.73	18.06
0.00	2.81	-1.31	0.23	2.81	-2.56	0.46	2.81	2.18	0.69	2.81	20.41	0.92	2.81	30.66	1.15	2.81	31.73	1.38	2.81	35.03	1.60	2.81	30.56	1.83	2.81	27.53	2.06	2.81	18.39
0.00	2.89	0.10	0.23	2.89	-1.27	0.46	2.89	2.92	0.69	2.89	20.81	0.92	2.89	31.62	1.15	2.89	33.44	1.38	2.89	35.90	1.60	2.89	31.13	1.83	2.89	28.64	2.06	2.89	19.48
0.00	2.97	1.65	0.23	2.97	0.45	0.46	2.97	3.67	0.69	2.97	21.60	0.92	2.97	32.88	1.15	2.97	35.22	1.38	2.97	36.43	1.60	2.97	32.16	1.83	2.97	30.21	2.06	2.97	20.37
0.00	3.05	3.29	0.23	3.05	2.48	0.46	3.05	4.66	0.69	3.05	22.29	0.92	3.05	33.79	1.15	3.05	36.21	1.38	3.05	37.11	1.60	3.05	32.38	1.83	3.05	31.72	2.06	3.05	21.35
0.00	3.13	4.91	0.23	3.13	4.32	0.46	3.13	5.48	0.69	3.13	23.13	0.92	3.13	34.95	1.15	3.13	37.61	1.38	3.13	37.75	1.60	3.13	33.12	1.83	3.13	32.84	2.06	3.13	22.17
0.00	3.20	6.50	0.23	3.20	5.84	0.46	3.20	7.12	0.69	3.20	24.70	0.92	3.20	35.98	1.15	3.20	38.37	1.38	3.20	38.19	1.60	3.20	33.85	1.83	3.20	34.18	2.06	3.20	22.94
0.00	3.28	8.02	0.23	3.28	7.44	0.46	3.28	8.69	0.69	3.28	26.13	0.92	3.28	37.40	1.15	3.28	39.41	1.38	3.28	38.48	1.60	3.28	33.98	1.83	3.28	34.76	2.06	3.28	23.63
0.00	3.36	9.49	0.23	3.36	9.05	0.46	3.36	10.50	0.69	3.36	27.75	0.92	3.36	38.72	1.15	3.36	40.46	1.38	3.36	38.66	1.60	3.36	34.26	1.83	3.36	35.23	2.06	3.36	24.25
0.00	3.44	10.90	0.23	3.44	10.62	0.46	3.44	12.68	0.69	3.44	29.41	0.92	3.44	39.69	1.15	3.44	40.71	1.38	3.44	38.28	1.60	3.44	33.99	1.83	3.44	35.34	2.06	3.44	24.78
0.00	3.52	12.23	0.23	3.52	12.19	0.46	3.52	14.20	0.69	3.52	30.68	0.92	3.52	40.84	1.15	3.52	41.43	1.38	3.52	38.40	1.60	3.52	33.42	1.83	3.52	34.71	2.06	3.52	25.30
0.00	3.59	13.46	0.23	3.59	13.66	0.46	3.59	16.08	0.69	3.59	31.91	0.92	3.59	41.97	1.15	3.59	42.10	1.38	3.59	39.05	1.60	3.59	33.15	1.83	3.59	34.50	2.06	3.59	26.42
0.00	3.67	14.59	0.23	3.67	14.93	0.46	3.67	17.81	0.69	3.67	32.69	0.92	3.67	43.26	1.15	3.67	42.70	1.38	3.67	40.56	1.60	3.67	33.83	1.83	3.67	33.65	2.06	3.67	27.55
0.00	3.75	15.56	0.23	3.75	15.99	0.46	3.75	19.18	0.69	3.75	33.04	0.92	3.75	44.01	1.15	3.75	42.49	1.38	3.75	41.21	1.60	3.75	34.65	1.83	3.75	32.35	2.06	3.75	27.42

Information Request – Response to Question RAI-2.3

Given the licensee's statement, "the mockup was used in conjunction with a current PDI-qualified manual phased array procedure, equipment, and personnel to determine if a qualified examination on this complex configuration could be produced. During the testing, known flaws within the mockup specimen could not be reliably detected," describe the site-specific mockup used to test the ultrasonic inspection procedures. Include general size of the mockup, materials, and the following in the response.

A. Provide the flaw types and sizes in the site specific mockup.
B. What flaws were detected with the manual phased array ultrasonic inspection technique?
C. What flaws were not detected?
D. What angles were scanned in performance of this demonstration?

ENO Response

Palisades' site-specific mockup general size (dimensions) and materials are shown in Attachment 2, "Palisades Site Specific Mockup Drawings Specimen 676-01."

A. The Mock-Up Specimen 676-01 contains a total of six flaws, four flaws in the nozzle base material and two flaws in a 2 inch pipe weld. Flaw #1's orientation is in the circumferential (CIRC) direction with a length of 1.200 inch and a depth of 0.240 inch, which represents a 7.9% through wall crack from the inside diameter (ID) surface. Flaw #2's orientation is in the AXIAL direction with a length of 0.500 inch and a depth of 0.300 inch, which represents a 9.9% through wall crack from the ID surface. Flaw #3's orientation is in the AXIAL direction with a length of 0.500 inch and a depth of 0.300 inch, which represents a 9.9% through wall crack from the ID surface. Flaw #4's orientation is in the CIRC direction with a length of 0.693 inch and a depth of 0.360 representing a 11.9% through wall crack from the ID surface.

B. All four flaws were detected with the aid of the mock-up design drawing. The drawing was used to locate the flaw locations prior to detecting them on the UT scan. Without this previous knowledge, the ability to detect the flaws using this method is questionable. This is attributed to the complex geometric configuration which causes numerous ultrasonic reflectors due to the weld joint configuration.

C. All four flaws were detected with the aid of the mock-up design drawing.

D. The performance demonstration conducted on the mock-up utilized the techniques listed in EPRI-DMW-PA-1, revision 4, "Procedure for Manual Phased Array (UT) of Dissimilar Metal Welds," paragraph 6.7.1, for longitudinal wave exams. The angles

scanned were for the qualified range of angles 25° thru 70°, with a one degree resolution.

Information Request – Response to Question RAI-2.4

In what way does the site specific mockup not meet the requirements of "Site Specific Configuration Mockup Requirements for Dissimilar Metal Welds," Revision C" (e.g. geometry, flaw types, materials, etc.)

ENO Response

The PNP mockup was designed prior to the development of the current industry "Site Specific Configuration Mockup Requirements for Dissimilar Metal Welds, Revision C." The mockup flaw sizes, flaw type, and flaw location do not conform to the current industry requirements. See attached PNP mockup design drawing and industry mockup requirements referenced in Electric Power Research Institute (EPRI) Report 3002000204, "Nondestructive Evaluation: Performance Demonstration Initiative (PDI) Guidance for Improved Reliability in Ultrasonic Examinations, Guideline for Hands-on Practice, PDI-GL-001, Revision B, Site Specific Mockup Requirements for Dissimilar Metal Welds, Revision C, Appendix A – Performance Demonstration Initiative (PDI), Site Specific Configuration Mockup Requirements For Dissimilar Metal Welds, Revision C," dated May 2013.

Information Request – Response to Question RAI-2.5

Procedures have been developed to exam welds in larger nozzles than the hot leg drain nozzle weld. An ASME Code Section XI Appendix VIII Supplement 10 qualified examination procedure is capable of finding flaws 10% through-wall and greater. Explain the geometric differences between a larger nozzle (ASME Section XI, Table IWB-2500-1, Item number B9.31) and the hot leg drain nozzle that would prevent an ultrasonic examination from detecting a large flaw.

ENO Response

The configurations of the larger nozzles which fall under B9.31 are different than the hot leg drain in that they more closely resemble a conventional pipe butt weld joint configuration, as depicted in ASME Code, Section XI, IWB-2500-9, while the hot leg drain line does not. The B9.31 components are similar metal welds and the Performance Demonstration Qualification Sheets (PDQS) for these procedures are not based upon demonstration of any specific joint configuration.

With regard to ASME Code Section XI Appendix VIII Supplement 10 qualified examination procedures, flaw detection is dependent on a number of variables (i.e., configuration, flaw orientation, location, through wall dimension, inspection angle and technique, etc.). The Appendix VIII, Supplement 10 procedures (EPRI-DMW-PA-1, PDI-UT-10) are only qualified for examinations on the tapered surfaces and configurations depicted within the PDQS documents for these procedures.

While ASME Code, Section XI, IWB-2500-1 has three different figures for branch connections, they do not depict butter or any of the other metallurgical differences associated with dissimilar metal welds. The subject welds are dissimilar metal welds which would require the use of one of the qualified procedures. It is the combination of these metallurgical differences and configuration that make this weld a complex geometry requiring a specific demonstration as described in the Performance Demonstration Initiative program for dissimilar metal welds.

Information Request – Response to Question RAI-3.2

The NRC question RAI-3.1 requested the licensee to state the regulatory requirement and how the licensee would meet these requirements. The response by the licensee was to identify a new commitment. However, the staff requests that the licensee submit a new proposed alternative that clearly identifies the regulatory requirements and how those regulatory requirements will be met. The NRC staff would not consider a commitment to be appropriate, and requests the actions be elevated to conditions of the relief. As such, these actions would no longer be regulatory commitments and could not be modified or deleted by the licensee under the commitment management program. Any future changes to these actions would need to be submitted to the NRC for prior review and approval.

ENO Response

As requested, below is a revised proposed alternative for Relief Request Number RR 4-18:

Proposed Alternative

1) Perform periodic system leakage tests in accordance with ASME Section XI Examination Category B-P, Table IWB-2500-1.

2) Perform visual examinations (per Code Case N-722-1) and dye penetrant surface examinations (per ASME Section XI Examination Category B-J, Table IWB-2500-1) of the welds in accordance with ASME requirements.

Regulation 10 CFR 50.55a(g)(6)(ii)(F)(1) states "Licensees of existing, operating pressurized water reactors as of July 21, 2011 shall implement the requirements of

ASME Code Case N-770-1, subject to the conditions specified in paragraphs (g)(6)(ii)(F)(2) through (g)(6)(ii)(F)(10) of this section, by the first refueling outage after August 22, 2011."

Regulation 10 CFR 50.55a(g)(6)(ii)(F)(3) states that baseline examinations for welds in Code Case N-770-1, Table 1, Inspection Items A-1, A-2, and B, shall be completed by the end of the next refueling outage after January 20, 2012.

Pursuant to 10 CFR 50.55a(3)(ii), ENO will comply with 10 CFR 50.55a(g)(6)(ii)(F) by completing the baseline examinations as required by Code Case N-770-1, for the welds identified in Attachment 1, Enclosure Table 1, of Relief Request Number RR 4-18 prior to the end of the next scheduled refueling outage (1R24).

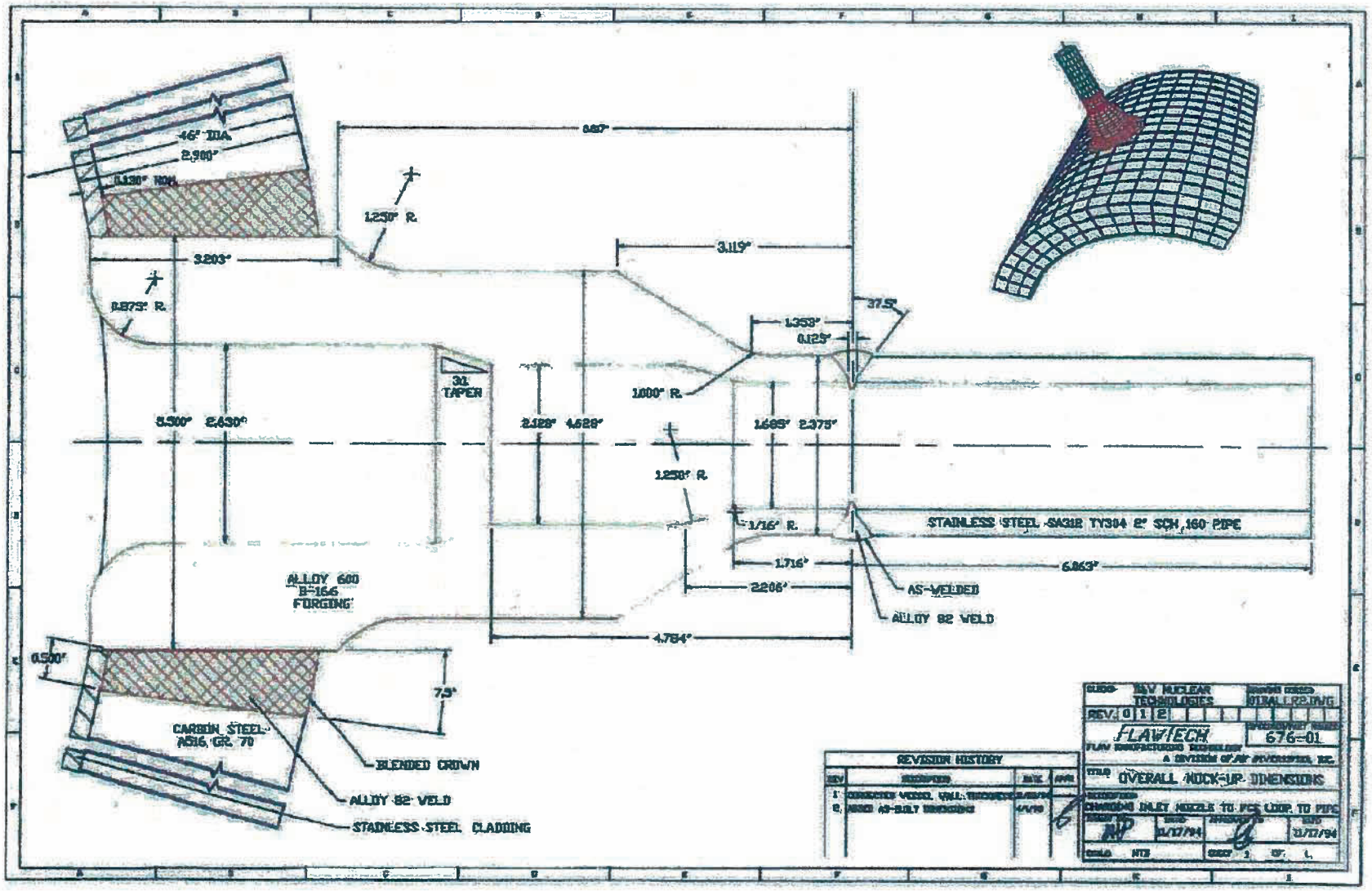
ATTACHMENT 2

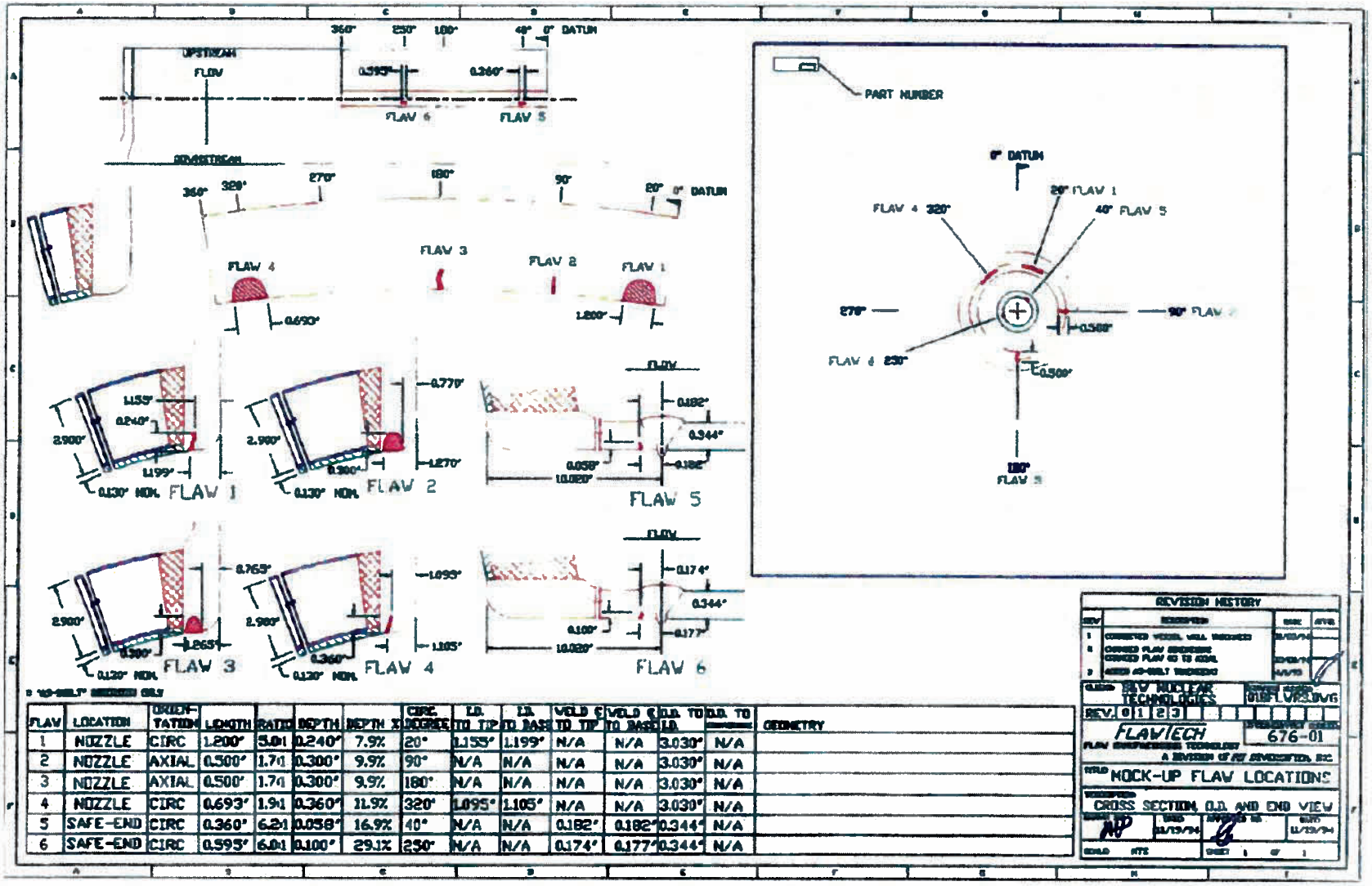
Palisades Site Specific

Mockup Drawings

Specimen 676-01

Two pages follow


46" DIA.
2.900"
0.330" MIN.
1.250" R.
3.203"
3.119"
0.875" R.
37.5°
1.353"
0.125"
30° TAPER
1.000" R.
5.300"
2.630"
2.128"
4.628"
1.669"
2.375"
1.250" R.
1/16" R.
STAINLESS STEEL SA312 TY304 2" SCH 160 PIPE
1.716"
6.863"
2.206"
AS-WELDED
ALLOY 82 WELD
ALLOY 600
B=166
FORGING
4.784"
0.500"
7.5°
CARBON STEEL
A516 GR. 70
BLENDED CROWN
ALLOY 82 WELD
STAINLESS STEEL CLADDING
REVISION HISTORY
REV
DESCRIPTION
DATE
APP'D
1
2
B&V NUCLEAR TECHNOLOGIES
OVERALL PROJ DWG
REV. 0 1 2
FLAWTECH
FLAW INSPECTIONS INCORPORATED
A DIVISION OF AIR INDUSTRIES, INC.
676-01
TITLE
OVERALL MOCK-UP DIMENSIONS
DESCRIPTION
CHANGING INLET NOZZLE TO PCS LOOP TO PIPE
DRAWN
MP
DATE
11/17/94
APPROVED
DATE
11/17/94
SCALE
NTS
SHEET 1 OF 1



FLAW	LOCATION	ORIENTATION	LENGTH	RATIO	DEPTH	DEPTH %	CIRC. ANGLE	I.D. TO TIP	I.D. TO BASE	WELD C TO TIP	WELD C TO BASE	O.D. TO I.D.	O.D. TO	GEOMETRY
1	NOZZLE	CIRC	1.200"	5.01	0.240"	7.9%	20°	1.155"	1.199"	N/A	N/A	3.030"	N/A	
2	NOZZLE	AXIAL	0.500"	1.71	0.300"	9.9%	90°	N/A	N/A	N/A	N/A	3.030"	N/A	
3	NOZZLE	AXIAL	0.500"	1.71	0.300"	9.9%	180°	N/A	N/A	N/A	N/A	3.030"	N/A	
4	NOZZLE	CIRC	0.693"	1.91	0.360"	11.9%	320°	1.095"	1.105"	N/A	N/A	3.030"	N/A	
5	SAFE-END	CIRC	0.360"	6.21	0.058"	16.9%	40°	N/A	N/A	0.182"	0.182"	0.344"	N/A	
6	SAFE-END	CIRC	0.595"	6.01	0.100"	29.1%	250°	N/A	N/A	0.174"	0.177"	0.344"	N/A	

REVISION HISTORY

REV	DESCRIPTION	DATE	APVD
1	CORRECTED VESSEL WALL THICKNESS	11/13/94	
2	CORRECTED FLAW DIMENSIONS CORRECTED FLAW #2 TO AXIAL	12/08/94	
3	ADDED 40-DEG. THICKNESS	11/4/95	

CLIENT: B&V NUCLEAR TECHNOLOGIES
PURCHASE ORDER: 0181.VR.BVG
REV. 0 1 2 3
FLAVTECH
FLAW ENGINEERING TECHNOLOGY
A DIVISION OF RSR INCORPORATED, INC.
DRAWING NUMBER: 676-01
TITLE: MOCK-UP FLAW LOCATIONS
DESCRIPTION: CROSS SECTION, O.D. AND END VIEW
DRAWN: MD DATE: 11/13/94
APPROVED: DATE: 11/13/94
SCALE: NTS
SHEET 1 OF 1