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RS-15-144

May 18, 2015

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

Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Additional Information Supporting Relief Request I4R-20, Inservice Inspection Program Relief Request Regarding Examination Coverage for the Fourth Inservice Inspection Interval

References:
1. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U.S. NRC, "Relief Request I4R-20, Inservice Inspection Program Relief Request Regarding Examination Coverage for the Fourth Inservice Inspection Interval," dated January 23, 2014
2. Email from B. Mozafari (U.S. NRC) to K. Nicely (Exelon Generation Company, LLC), "Additional DRAFT RAI Questions for Quad Cities (TAC Nos. MF3397 AND MF3398)," dated April 17, 2015 (ADAMS Accession No. ML15107A257)

In Reference 1, Exelon Generation Company, LLC (EGC), requested NRC approval of a relief request associated with the fourth inservice inspection interval for Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2. Relief was requested due to the impracticality of satisfying the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," due to plant design. The relief request was based on the limitations that precluded completion of full Code examination requirements of ASME Class 1 components during the fourth interval. Code examination of the components was limited due to the materials of construction and design configurations.

The NRC requested additional information that is needed to complete the evaluation in Reference 2. In response to this request, EGC is providing the attached information.

A047
NRR

There are no regulatory commitments contained in this letter. Should you have any questions concerning this letter, please contact Mr. Kenneth M. Nicely at (630) 657-2803.

Respectfully,

Patrick R. Simpson
Manager – Licensing

Attachment: Response to Request for Additional Information

cc: NRC Regional Administrator, Region III
NRC Senior Resident Inspector, Quad Cities Nuclear Power Station

**ATTACHMENT**
**Response to Request for Additional Information**

**NRC Request 2.1: Request for Relief I4R-17, Examination Category B-A, Items B1.40 and B1.51, Pressure Retaining Welds in Vessels in Reactor Vessels, QCNPS 1 and 2**

| Table 2.1.1- Examination Category B-A (Unit 1) | | | |
|---|---|---|---|
| **Code Item** | **Weld ID** | **Weld Type** | **Coverage** |
| B1.51 | 1/REACTORVESSEL/ BMR-016-295/WELD | RPV WELD BELTLINE REPAIR AREA | 83.0% |
| B1.51 | 1/REACTORVESSEL/ BMR-167-305/WELD | RPV WELD BELTLINE REPAIR AREA | 87.0% |

Provide coverage plots for all RPV beltline repair welds listed in Table 2.1.1 above. From the coverage records provided in the licensee's RAI response, it is difficult to tell which areas have been covered.

**Response**

As discussed with the NRC, coverage plots of the beltline repair welds listed in Table 2.1.1 above are not readily available. As such, a drawing of the welds with a verbal description of the examination limitations are provided in lieu of coverage plots.

Weld BMR-016-295 received 83.0% coverage in the 2005 exam. Limitations were due to jet pump riser brackets and a core shroud repair tie rod. This is an increase of 83% coverage from the previous interval's inspection due to the use of a different tool. Weld BMR-167-305 received 87.0% coverage in the 2005 exam. Limitations were due to a jet pump riser bracket. This is an increase of 7.5% coverage from the previous interval's inspection due to the use of a different tool. Drawings showing the location of the beltline repair welds and optimal coverage plots are provided below.

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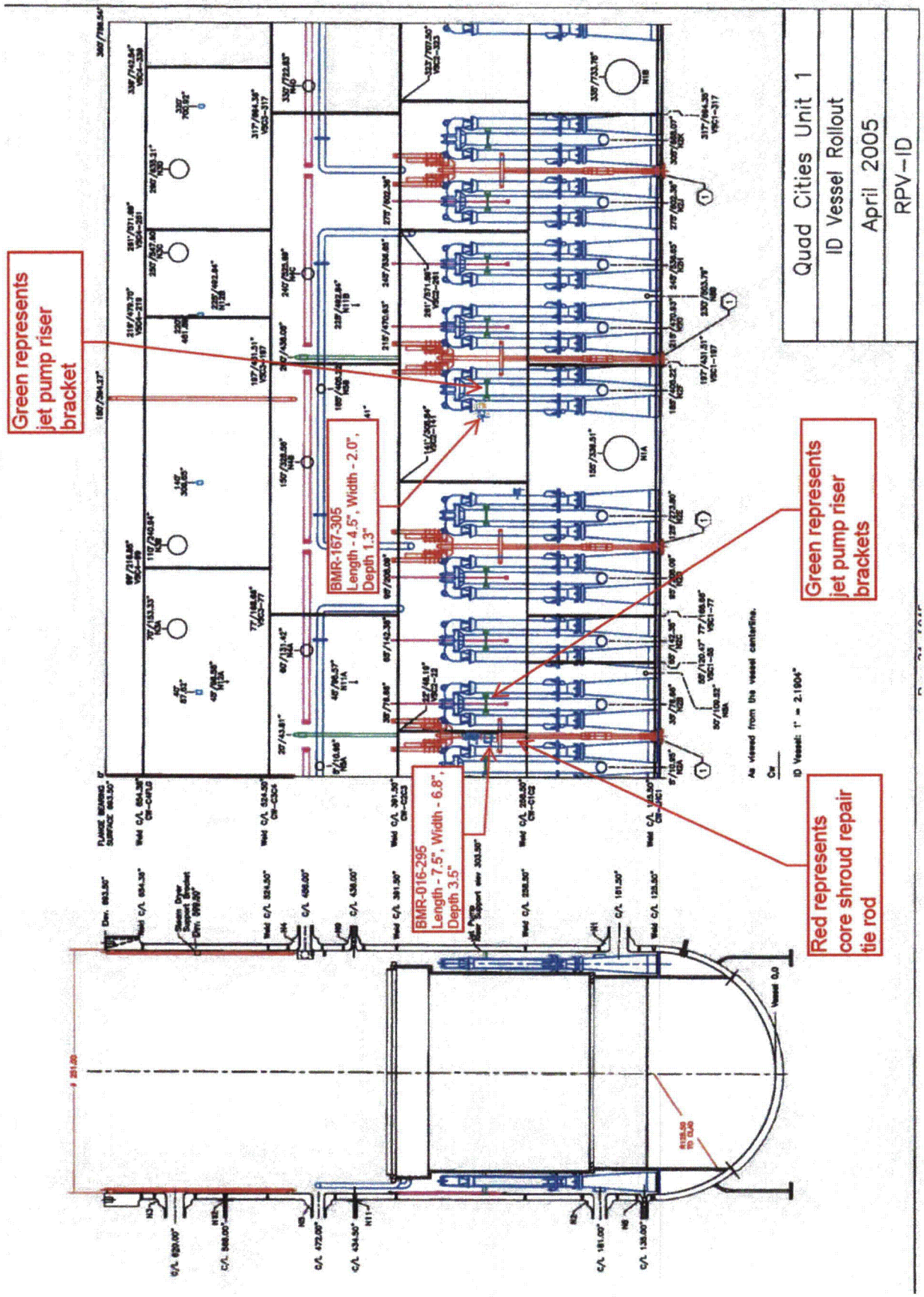
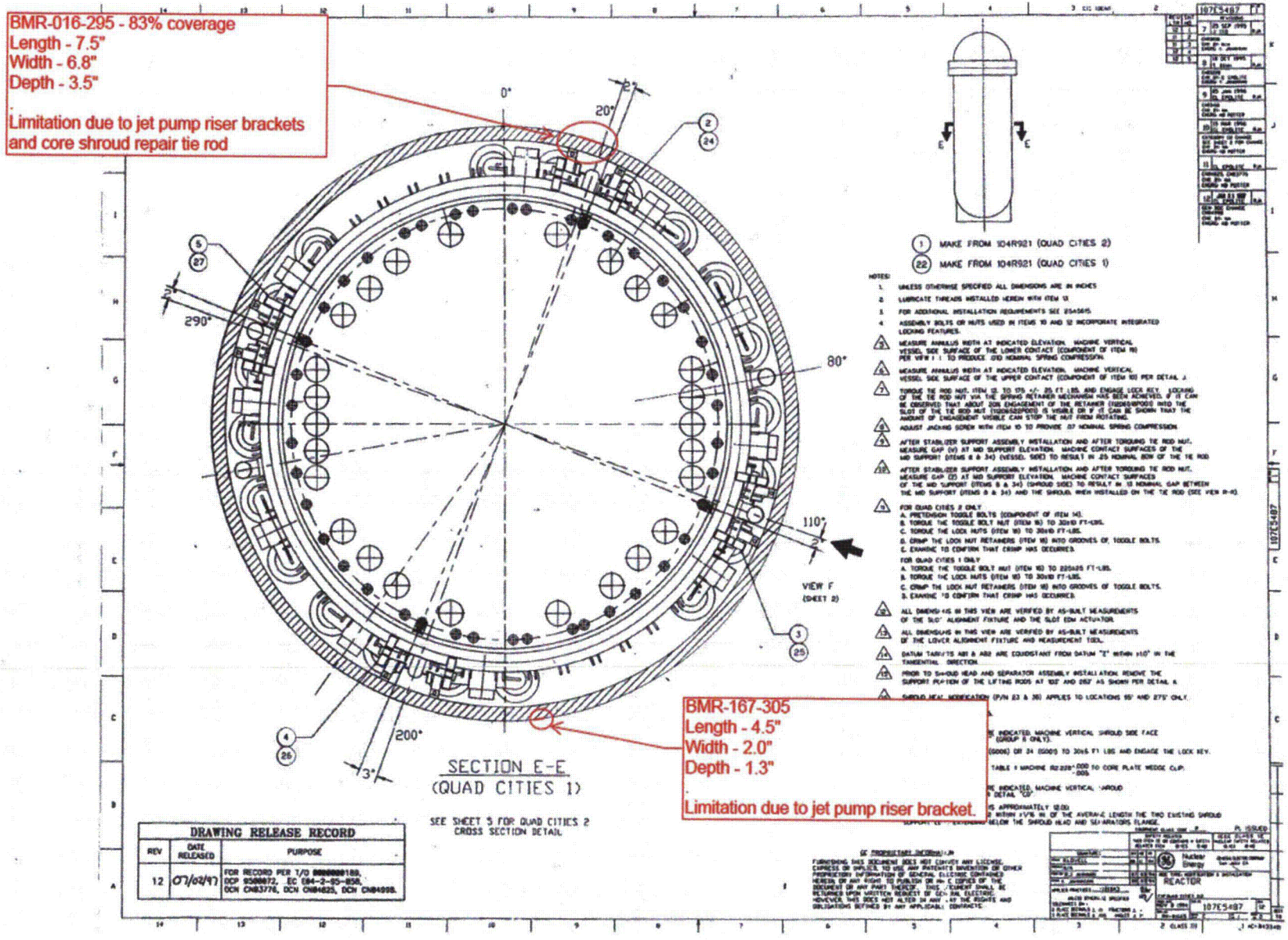
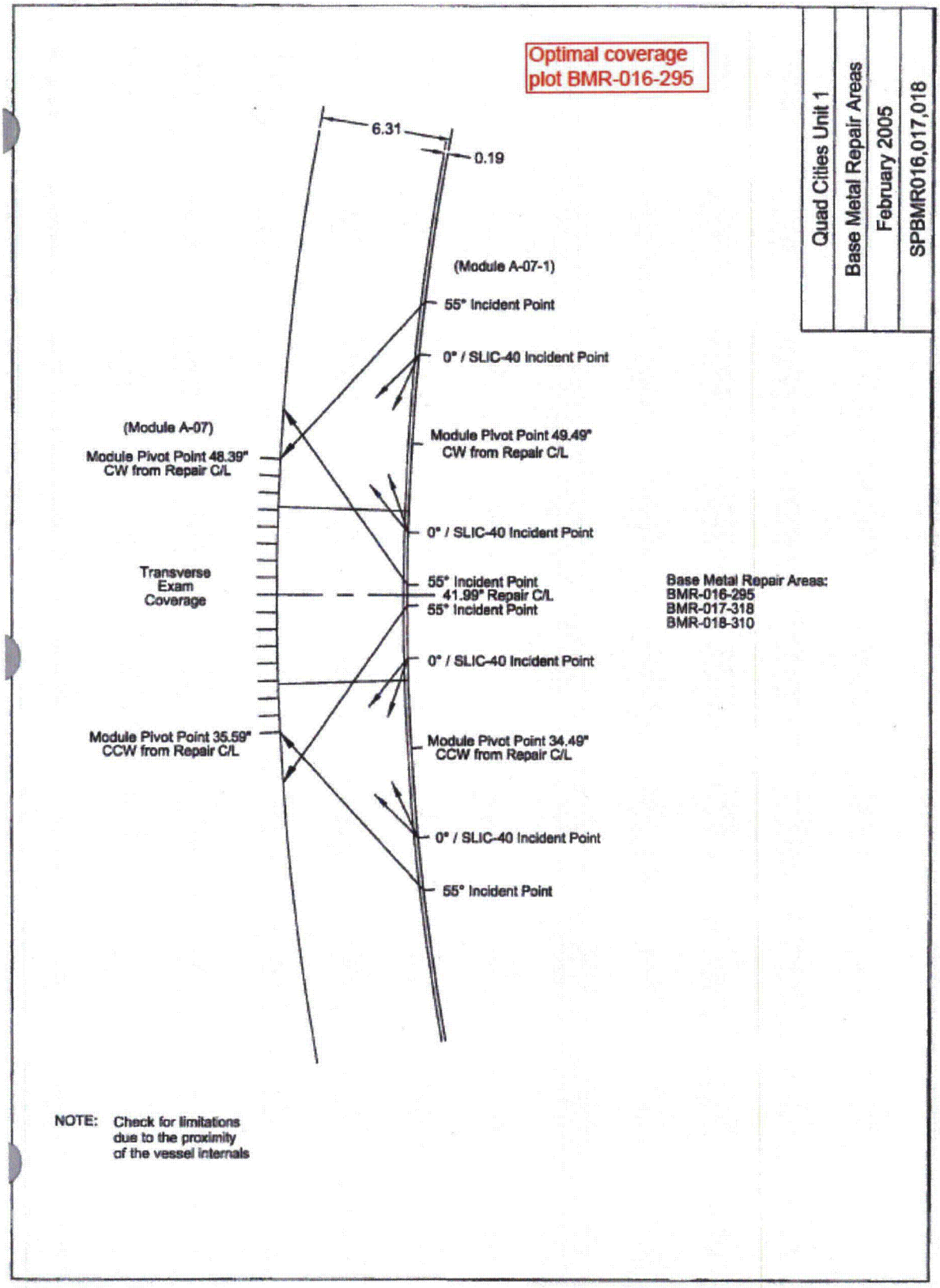



BMR-016-295 - 83% coverage
Length - 7.5"
Width - 6.8"
Depth - 3.5"
Limitation due to jet pump riser brackets and core shroud repair tie rod
BMR-167-305
Length - 4.5"
Width - 2.0"
Depth - 1.3"
Limitation due to jet pump riser bracket.
SECTION E-E
(QUAD CITIES 1)
SEE SHEET 5 FOR QUAD CITIES 2 CROSS SECTION DETAIL
VIEW F (SHEET 2)
DRAWING RELEASE RECORD
REV
DATE RELEASED
PURPOSE
12
07/02/97
FOR RECORD PER T/O 8888888189, DCP 9300972, EC 384-2-95-858, DCN CN83776, DCN CN84825, DCN CN84958.
MAKE FROM 104R921 (QUAD CITIES 2)
MAKE FROM 104R921 (QUAD CITIES 1)
REACTOR


Optimal coverage plot BMR-016-295
Quad Cities Unit 1
Base Metal Repair Areas
February 2005
SPBMR016,017,018
6.31
0.19
(Module A-07-1)
55° Incident Point
0° / SLIC-40 Incident Point
(Module A-07)
Module Pivot Point 48.39" CW from Repair C/L
Module Pivot Point 49.49" CW from Repair C/L
0° / SLIC-40 Incident Point
Transverse Exam Coverage
55° Incident Point
41.99° Repair C/L
55° Incident Point
0° / SLIC-40 Incident Point
Module Pivot Point 35.59" CCW from Repair C/L
Module Pivot Point 34.49" CCW from Repair C/L
0° / SLIC-40 Incident Point
55° Incident Point
Base Metal Repair Areas:
BMR-016-295
BMR-017-318
BMR-018-310
NOTE: Check for limitations due to the proximity of the vessel internals

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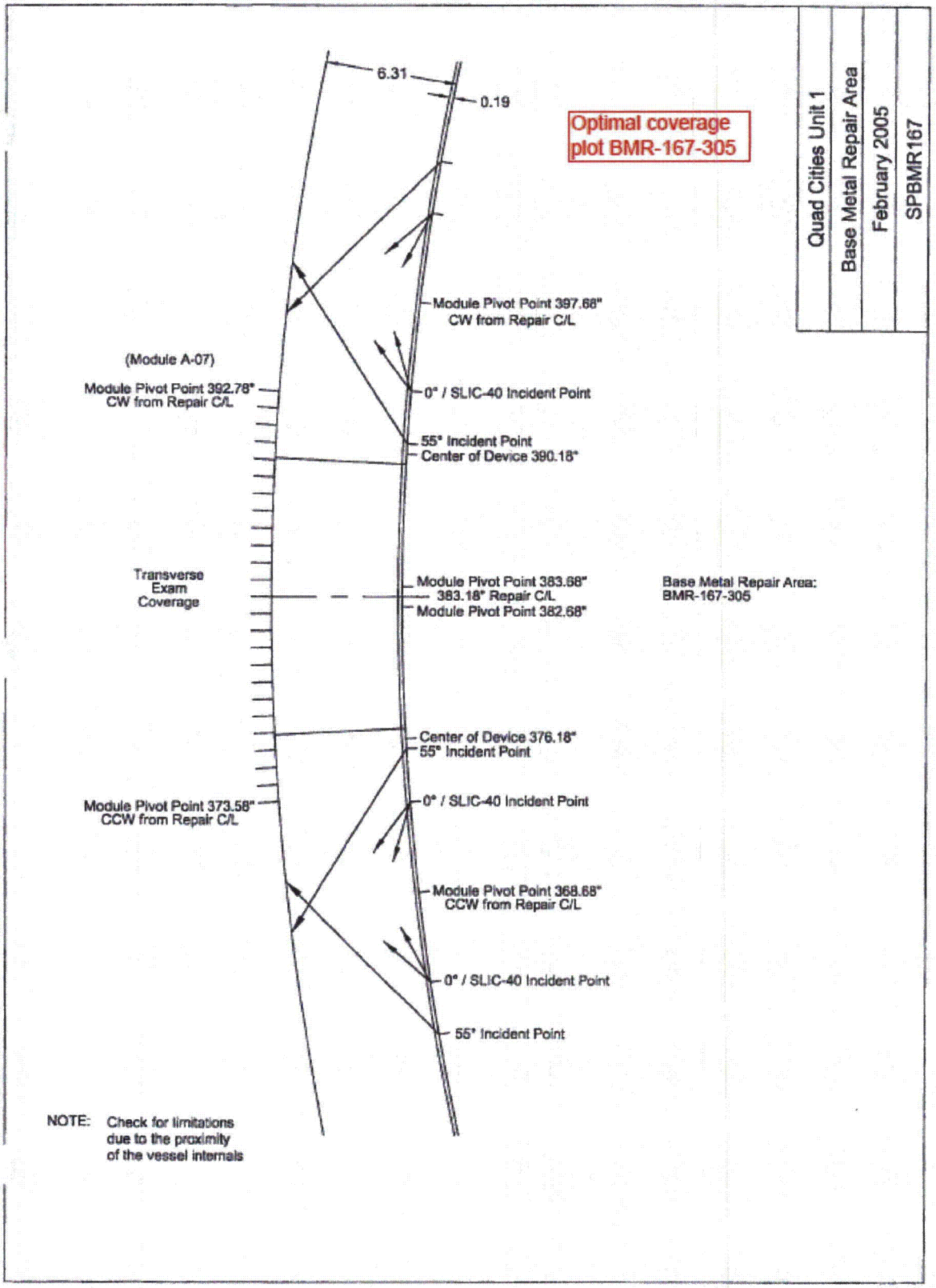

**NRC Request 2.2: Request for Relief I4R-20, Part B, Examination Category B-D, Item B3.90, Full Penetration Welded Nozzles in Vessels, QCNPS 1 and 2**

Verify in that the base materials near the inside surface of the weld joints, particularly the high regions of stress, were examined in the B-D, Items B3.90 welds in QCNPS 1 and 2.

**Response**

Accessible portions of the base materials near the inside surface of the weld joints, including the high regions of stress, were examined in the B-D, Item B3.90 welds. The volumetric examination coverage was limited due to the configuration of the nozzles and interferences.

**NRC Request 2.3: Request for Relief I4R-20, Part D, Examination Category R-A, Item R1.20, Risk Informed Piping Examinations, QCNPS 1**

The licensee requested relief for limited examinations of dissimilar metal welds included in their risk-informed piping program. These welds are designated as R1.20, which indicates that "no known degradation mechanism" has been identified. The licensee obtained significant volumetric coverage on these welds (approximately 86 per cent); however, it is unclear whether the correct RI-ISI designation has been assigned. Please discuss the following:

a. What are the materials of construction for the nozzle, the safe end, and the weld metal?

b. If the welds contains alloy 82, discuss the designation of the weld as R1.20 considering operational experience with stress corrosion cracking in Alloy 82 welds in Boiling Water Reactors.

**Response**

The materials of construction for the nozzle, the safe end, and the weld metal are listed below. The welds do not contain alloy 82.

| Component | Materials of Construction |
|---|---|
| nozzle | ASTM A508 CL.2<br>ASME Code Case 1332-2 |
| safe end | ASME SA336 CL.F8 |
| weld metal | ASTM A371 - ER308L |