

10 CFR 50.55a

TMI-11-128
August 30, 2011

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

Three Mile Island Nuclear Station, Unit 1
Renewed Facility Operating License No. DPR-50
NRC Docket No. 50-289

Subject: Response to Request for Additional Information - Relief Request RR-11-01
and RR-11-02

- References:
- 1) Letter from D. P. Helker (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Submittal of Relief Request RR-11-01 and RR-11-02," dated February 10, 2011
 - 2) Letter from P. Bamford (U.S. Nuclear Regulatory Commission) to M. J. Pacilio (Exelon Generation Company, LLC), "Three Mile Island Nuclear Station, Unit 1 – Request for Additional Information Regarding Third Inservice Inspection Interval Relief Requests RR-11-01 and RR-11-02 (TAC NOS. ME5670 and ME5671)," dated July 27, 2011

In the Reference 1 letter, Exelon Generation Company, LLC (Exelon) submitted for your review two (2) relief requests associated with the third Inservice Inspection (ISI) interval for Three Mile Island Nuclear Station (TMI), Unit 1. RR-11-01 concerns requirements for examination of steam generator welds that were replaced in the fall 2009 Refueling Outage (T1R18). RR-11-02 concerns four (4) High Pressure Injection circumferential valve to safe-end welds installed during the fall 2009 Refueling Outage (T1R18). In the Reference 2 letter, the U.S. Nuclear Regulatory Commission requested additional information. Attached is our response.

There are no regulatory commitments in this letter.

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If you have any questions concerning this letter, please contact Tom Loomis at (610) 765-5510.

Respectfully,

A handwritten signature in black ink, appearing to read "Michael D. Jesse". The signature is fluid and cursive, with the last name "Jesse" written in a smaller, more legible script at the end of the signature.

Michael D. Jesse
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Response to Request for Additional Information - Relief Requests RR-11-01
and RR-11-02

cc: Regional Administrator, Region I, USNRC
USNRC Senior Resident Inspector, TMI
USNRC Project Manager, [TMI] USNRC

Attachment

Response to Request for Additional Information - Relief Requests RR-11-01 and RR-11-02

Question:

RR-11-01

1. Describe the specific limitations for each item as to why 100% of the required inspection volume cannot be examined, i.e., what configuration, interference or other reason prevented 100% ultrasonic examination coverage of the item in question?

Response:

Figure 1 below is a duplication of Figure 1 from Relief Request RR-11-01 with annotations noting the examination limitations due to the nozzle configuration. Figure 2 below provides a steam generator lower head configuration that includes the steam generator support skirt attachment that limited examination coverage from the head shell (applicable to welds RCH0001ASG0003N, RCH0001ASG0004N, RCH0001BSG0008N, and RCH0001BSG0009N).

Figure 3 below is a duplication of Figure 2 from Relief Request RR-11-01 with annotations noting the examination limitations due to the nozzle configuration. The annotations and configuration are applicable to welds RCH0001ASG0002N and RCH0001BSG0010N.

Figure 4 below provides a design configuration for weld RCH0001BSG0030N along with limitation annotations. Figure 5 below provides an insulation configuration with annotations identifying support steel locations that limited examination coverage for weld RCH0001BSG0030N.

As indicated in Relief Request RR-11-01, the steam generators were replaced during the 2009 refueling outage. These nozzle welds are no longer in service; therefore, application of additional examination techniques is no longer practical. The currently installed steam generators were designed to eliminate similar examination limitations.

Figure 1
NDE Data Report Coverage Plot for Welds RCH0001ASG0003N and RCH0001ASG0004N.

Note that welds RCH0001BSG0008N and RCH0001BSG0009N are identical in design.

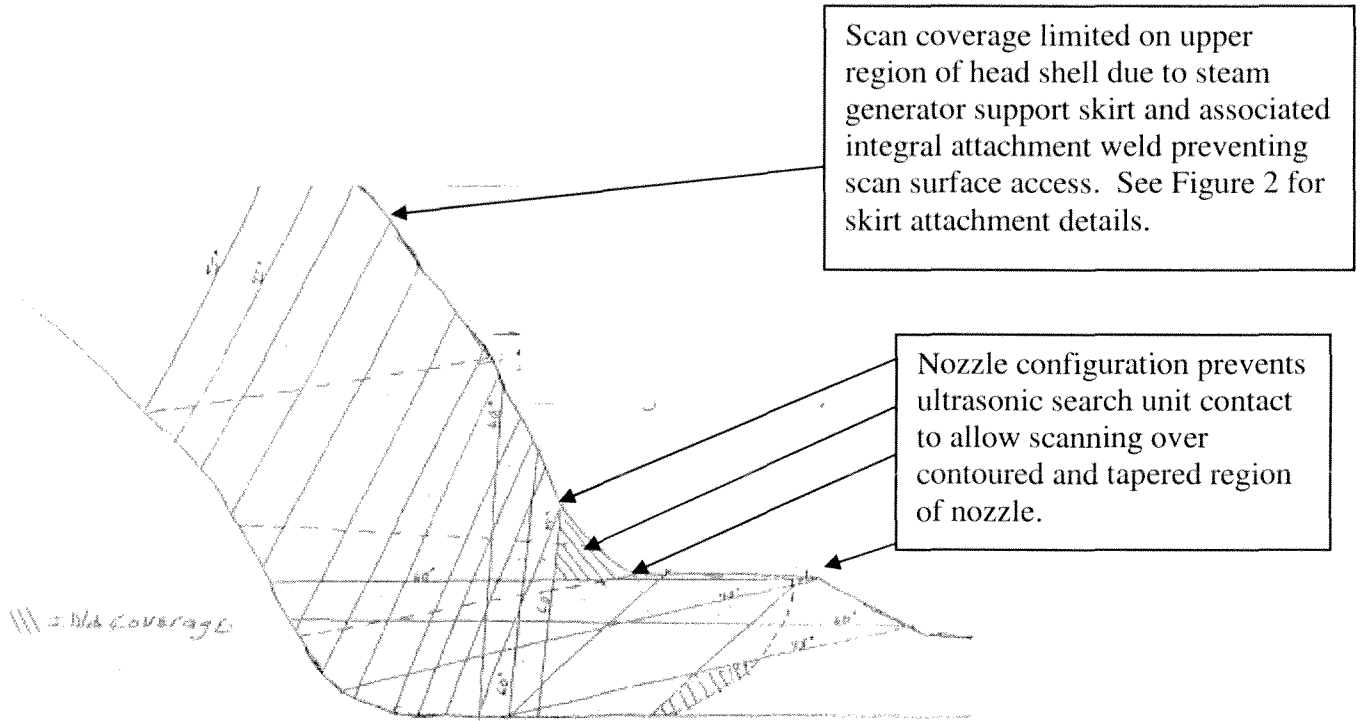


Figure 2
Welds RCH0001ASG0003N, RCH0001ASG0004N, RCH0001BSG0008N and
RCH0001BSG0009N
Support Skirt Interference

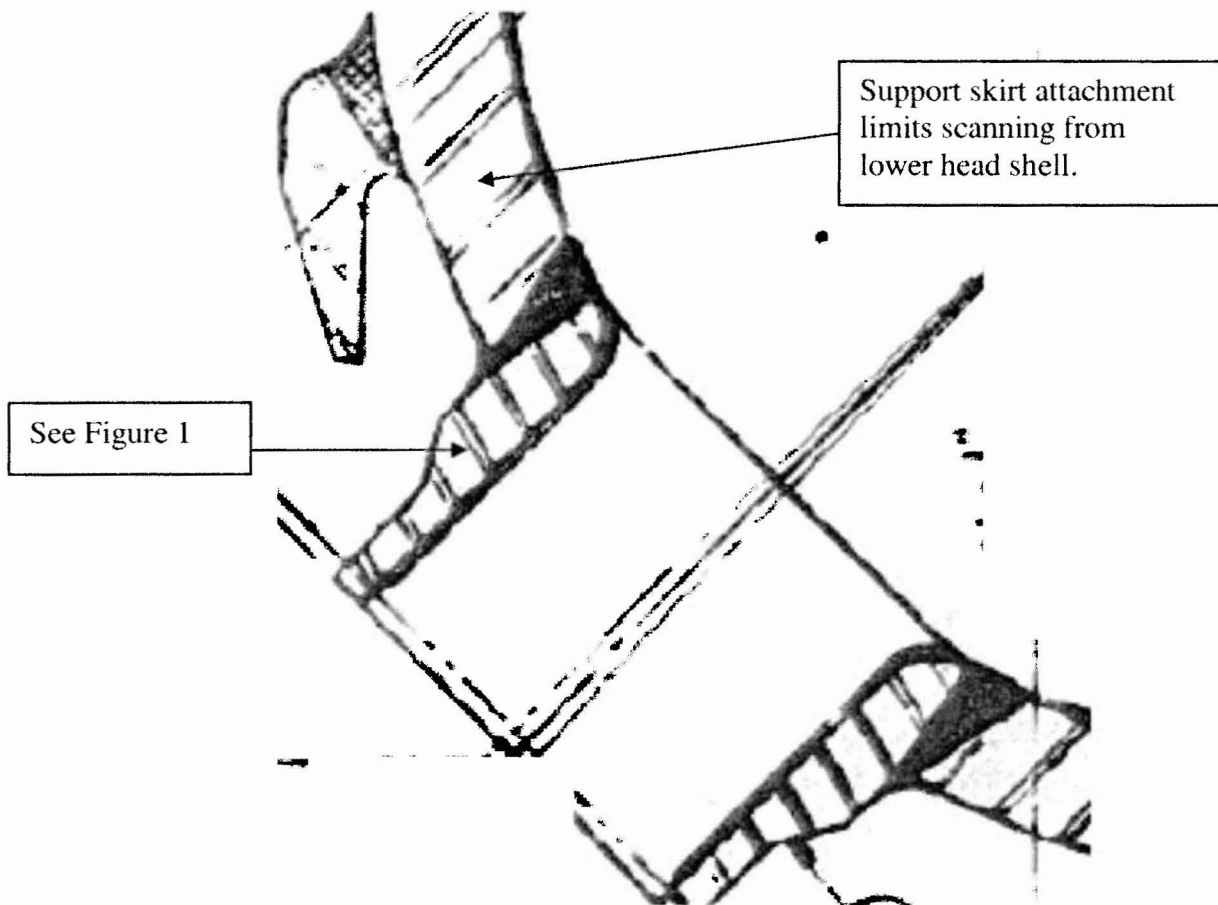


Figure 3
NDE Data Report Coverage Plot for Welds RCH0001ASG0002N and
RCH0001BSG0010N

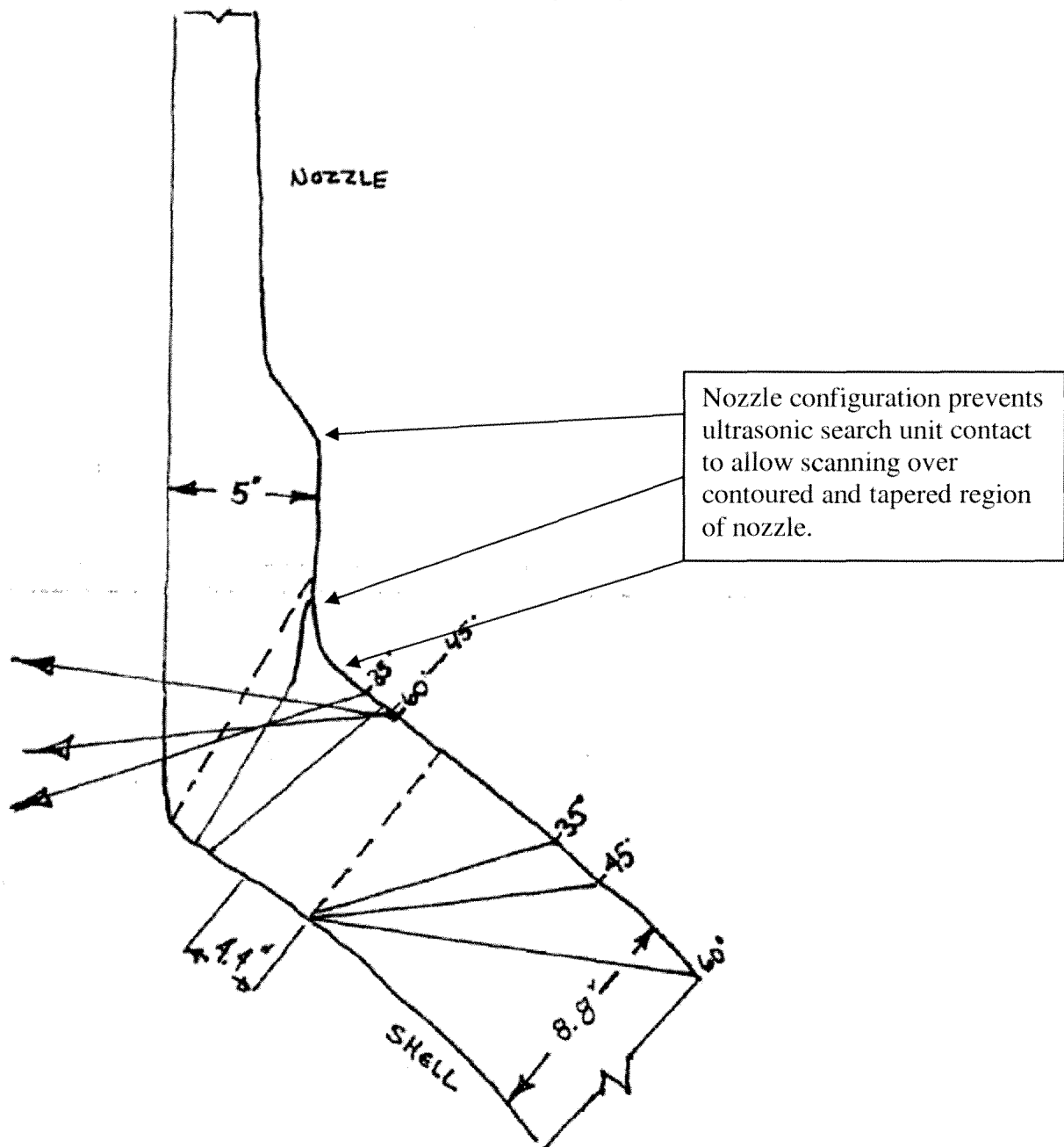


Figure 4
Weld RCH0001BSG0030N Design

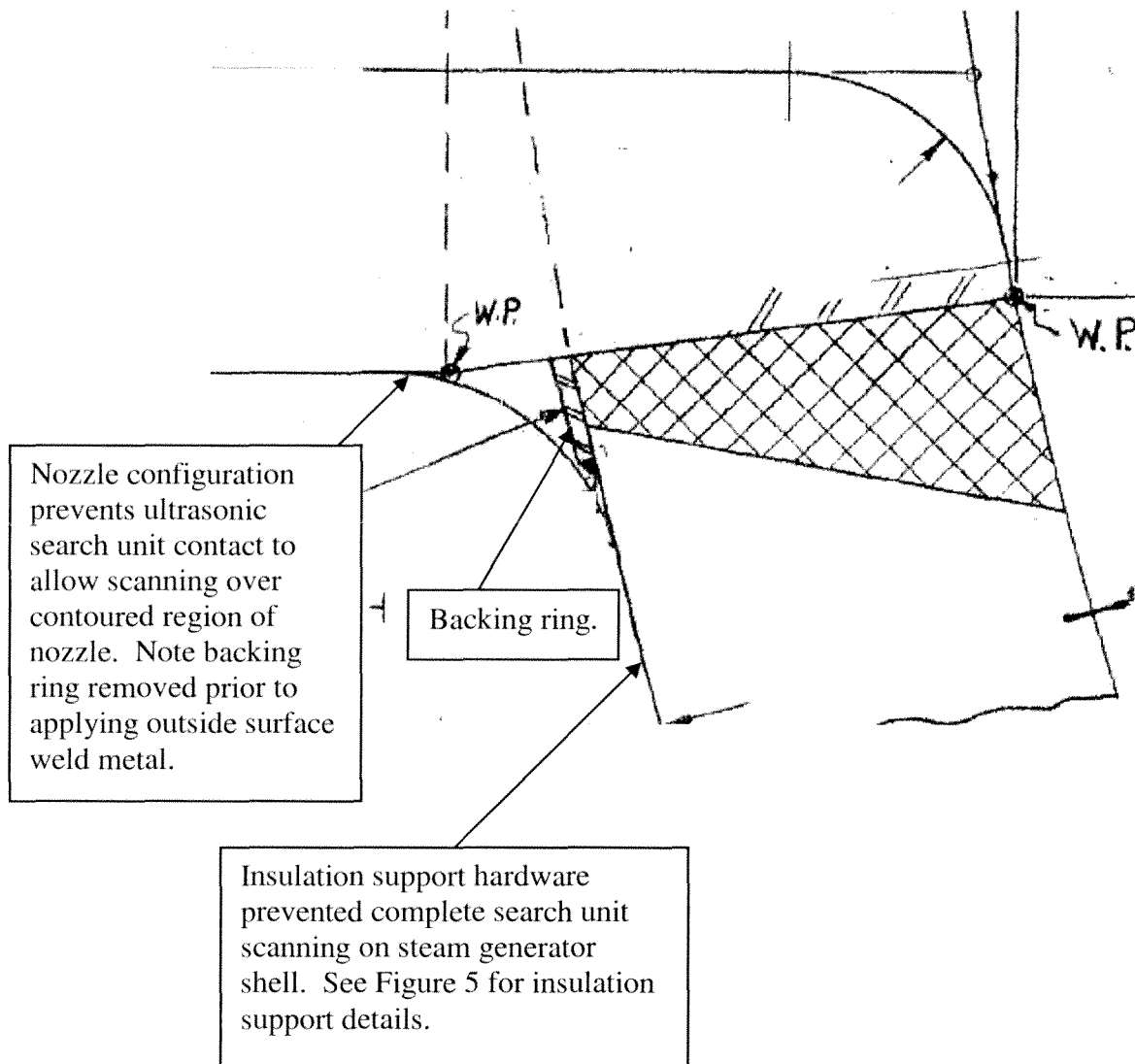
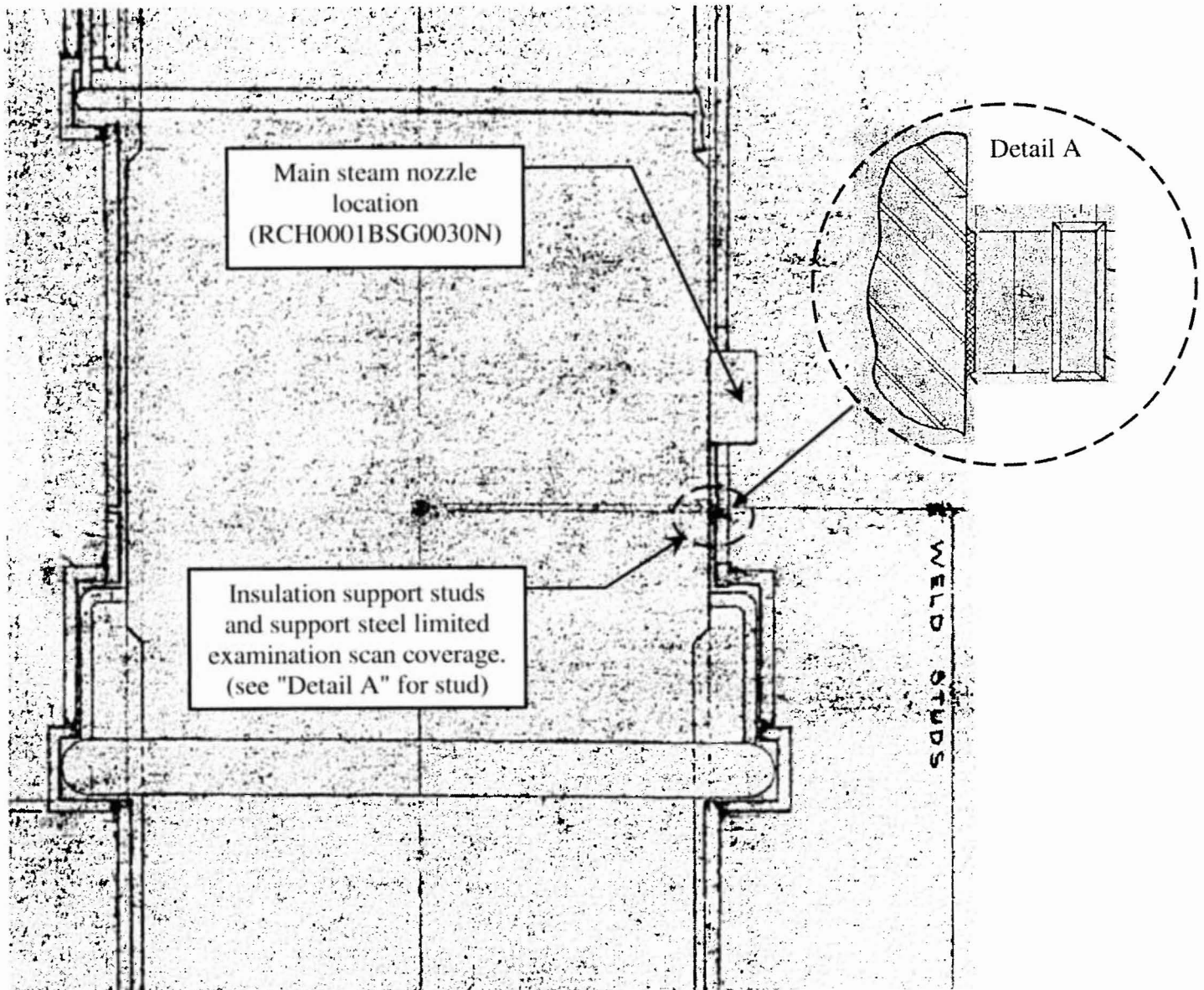


Figure 5
Weld RCH0001BSG0030N
Insulation Installation



Question:

RR-11-02

1. The submittal states that due to valve geometry, code coverage is limited to 50%. Please describe Exelon's best effort attempt to achieve maximum coverage in/through the cast austenitic stainless steel portion of these welds.

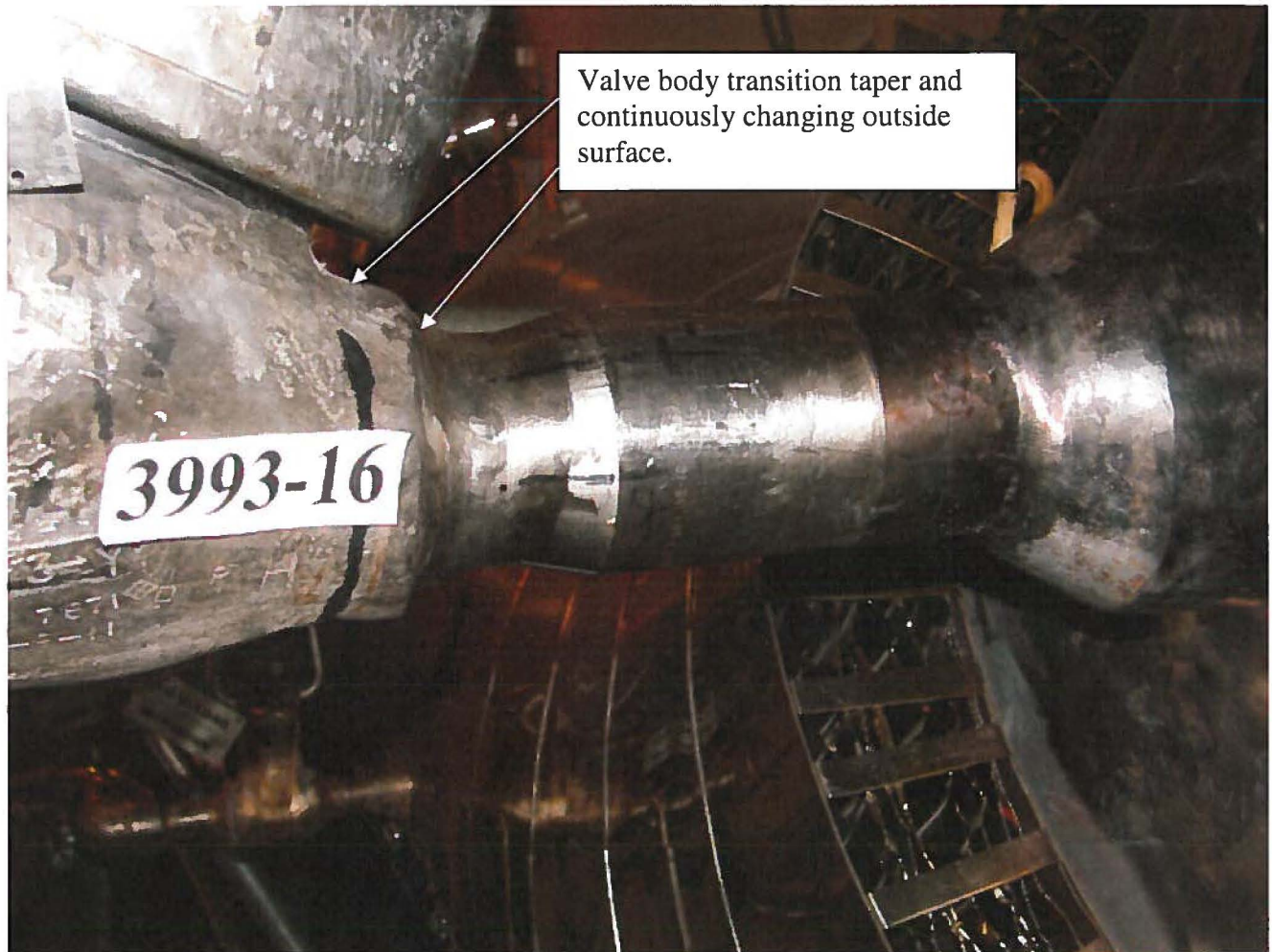
Response:

TMI, Unit 1 completed the ultrasonic examination per procedure, PDI-UT-2, Revision C, which describes the actions for single sided weld examination. The actions completed are:

- 6.7.2.1 For components where access is limited to a single side of the component, the following additional factors shall be considered:
 - a.) For the inspection of the same side weld volume, the techniques and processes defined for dual sided access shall be utilized.
 - b.) When accessibility is limited to a single side in materials equal to or less than 0.50" thick, a 2.25 MHZ, 70° shear wave search unit shall be used for the detection and length sizing of flaws on the far side of the weld.

While not PDI qualified for detection of flaws on the far side of an austenitic weld, the 70° shear wave examination interrogates the far side of the weld along with a lower adjacent segment of the Cast Austenitic Stainless Steel (CASS) valve body. There are no additional ultrasonic examination methods beyond the techniques described that will provide meaningful and reliable examination results. The valve body is constructed of A351-CF8M material (CASS) for which there are no ASME Section XI, Appendix VIII / Performance Demonstration Initiative qualified examination techniques. Current UT examination techniques have not demonstrated reliable performance in CASS material due to sound attenuation. The valve configuration has a tapered transition at the edge of the weld and a continuously changing outside surface contour which limits ultrasonic search unit contact (see Figure 6 below).

Figure 6
Valve to Safe End Valve Configuration



Question:

2. A pre-replacement typical valve to safe-end configuration was provided. Has the configuration changed post-replacement?

Response:

There is no change to the valve configuration. The safe-end design, however, was modified to move the safe-end outside surface taper further away from the valve to allow full examination coverage of the safe-end side of the weld including adjacent base material. The removed safe-end did not provide adequate surface area for UT examination on the safe-end side of the weld. This resulted in the pre-service examination coverage improvement when compared to the original configuration.