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Fred Dacimo
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March 27, 2003
NL-03-054

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

SUBJECT: Indian Point Nuclear Generating Unit 3
Docket No. 50-286
NRC Order EA-03-009 Relaxation Request Regarding
Inspection of Reactor Pressure Vessel Head Nozzles

REFERENCES:

1. NRC letter dated February 11, 2003; S. Collins to Holders of Licenses for Operating Pressurized Water Reactors, "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors."

2. Entergy letter to NRC, NL-03-037; "Answer to February 11, 2003 Order to Modify PWR Licenses for Interim Inspection Requirements for Reactor Pressure Vessel Heads", dated March 3, 2003.

3. Entergy letter to NRC, IPN-02-095; "Reactor Pressure Vessel Head and Penetration Nozzles Inspection Plan for Spring 2003 Refueling Outage", dated December 19, 2002.

Dear Sir:

Entergy Nuclear Operations, Inc (ENO) is requesting a relaxation from the requirements of NRC Order EA-03-009 (Reference 1), for Indian Point 3 regarding the coverage of ultrasonic testing specified in Section IV.C(2)(b)(i):

> "Ultrasonic testing of each RPV head penetration nozzle (i.e., nozzle base material) from two (2) inches above the J-groove weld to the bottom of the nozzle and ..."

ENO identified the need for this relaxation in the 20-day reply (Reference 2) to the Order. The Relaxation Request, provided in Attachment I, demonstrates that the proposed alternative will provide an acceptable level of quality and safety, in accordance Section IV.F(1) of the Order.

The inspection of the reactor pressure vessel head will be conducted in the refueling outage scheduled to begin March 28, 2003 as described in Reference 3. Approval of this request is not

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currently required prior to the outage to support ENO compliance with the Order, because the planned inspection includes a 100% bare metal visual examination per Section IV. C(2)(a). However, ENO requests prompt feedback regarding this relaxation request to ensure flexibility with inspection activities.

There are no new commitments identified in this letter. If you have any questions or require additional information, please contact Mr. Kevin Kingsley at 914-734-5581.

Very truly yours,

Fred R. Dacimo
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ATTACHMENT I TO NL-03-054

RELAXATION REQUEST REGARDING ULTRASONIC TESTING OF REACTOR PRESSURE VESSEL HEAD NOZZLES IN ACCORDANCE WITH NRC ORDER EA-03-009, SECTION IV. F.

A. ASME COMPONENTS AFFECTED

Component Number: B4.12

Description: Reactor Pressure Vessel Head Penetration Nozzles (78)

Code Class: 1

B. REQUIREMENTS OF US NRC ORDER EA-03-009

Entergy Nuclear Operations, Inc (ENO) has determined the susceptibility category (Moderate) and required inspections, in accordance with Sections IV.A, IV.B, and IV.C of NRC Order EA-03-009, applicable to Indian Point 3 (IP3) for refueling outage 3R12, scheduled to begin March 28, 2003. Section IV.C (2) of the Order specifies the following inspections for those plants in the Moderate category:

(2) For those plants in the Moderate category, RPV head and penetration inspections shall be performed such that at least the requirements of 2(a) or 2(b) are performed each refueling outage. In addition the requirements of 2(a) and 2(b) shall each be performed at least once over the course of every two (2) refueling outages.

(a) Bare metal visual examination of 100% of the RPV head surface (including 360° around each RPV head penetration nozzle).

(b) Either:

(i) Ultrasonic testing of each RPV head penetration nozzle (i.e., nozzle base material) **from two (2) inches above the J-groove weld to the bottom of the nozzle** and an assessment to determine if leakage has occurred into the interference fit zone, OR

(ii) Eddy current testing or dye penetrant testing of the wetted surface of each J-Groove weld and RPV head penetration nozzle base material to at least two (2) inches above the J-groove weld.

C. REASON FOR RELAXATION REQUEST

ENO is planning to perform ultrasonic testing of nozzles based on Section IV. C (2)(b)(i). However, the bottom 0.75 inches of the nozzles are designed with a threaded region to accommodate the installation of guide funnels (Figure 1). Meaningful ultrasonic test data cannot be obtained in this region, due to dispersion of the ultrasonic test signal. ENO personnel have developed experience with the ultrasonic testing method and data evaluation during a similar inspection recently performed for Indian Point 2 and continued use of ultrasonic testing, based on Section IV.C(2)(b)(i) is preferable to switching to eddy current testing based on Section IV. C (2)(b)(ii).

D. PROPOSED ALTERNATIVE

ENO will perform ultrasonic testing of each RPV head penetration nozzle (i.e., nozzle base material) from two (2) inches above the J-groove weld and extending down the nozzle to the top of the threaded region, which is approximately 0.75 inches above the bottom of the nozzle.

E. JUSTIFICATION

The ultrasonic testing will extend from two (2) inches above the J-groove weld to the top of the threaded region at the bottom of the penetration nozzle. The dimension from the bottom portion of the J-weld (at the lowest point) to the top of the threaded region ranges from 0.96 inches to 1.4 inches, along the penetration nozzle wall. This coverage provides an acceptable level of quality and safety because it encompasses the weld heat affected zone (HAZ), which is the area most susceptible to primary water stress corrosion cracking (PWSCC). It would be highly unlikely to only find cracking outside of the weld HAZ. A crack in the threaded region does not affect structural integrity of the reactor pressure vessel head, because the nozzle is not part of the reactor coolant pressure boundary at that location. A structural evaluation for the IP3 nozzles shows that the crack growth for a one 24-month operating cycle is approximately 0.45 inches. Therefore, an undetected crack in the threaded region would not propagate to the J-groove weld prior to the next inspection interval. If cracking is detected above the threaded region, and extending into this area, then other NDE test methods would be used to determine the extent of cracking.

F. DURATION OF RELAXATION

ENO requests relaxation of this requirement for the upcoming refueling outage, 3R12, scheduled to begin March 28, 2003, and for all subsequent refueling outages where ultrasonic examination techniques are used to inspect the RPV head penetration nozzle.

G. ATTACHMENTS TO RELAXATION REQUEST

Figure 1, IP3 Penetration Nozzles - Head Nozzle Weld Area

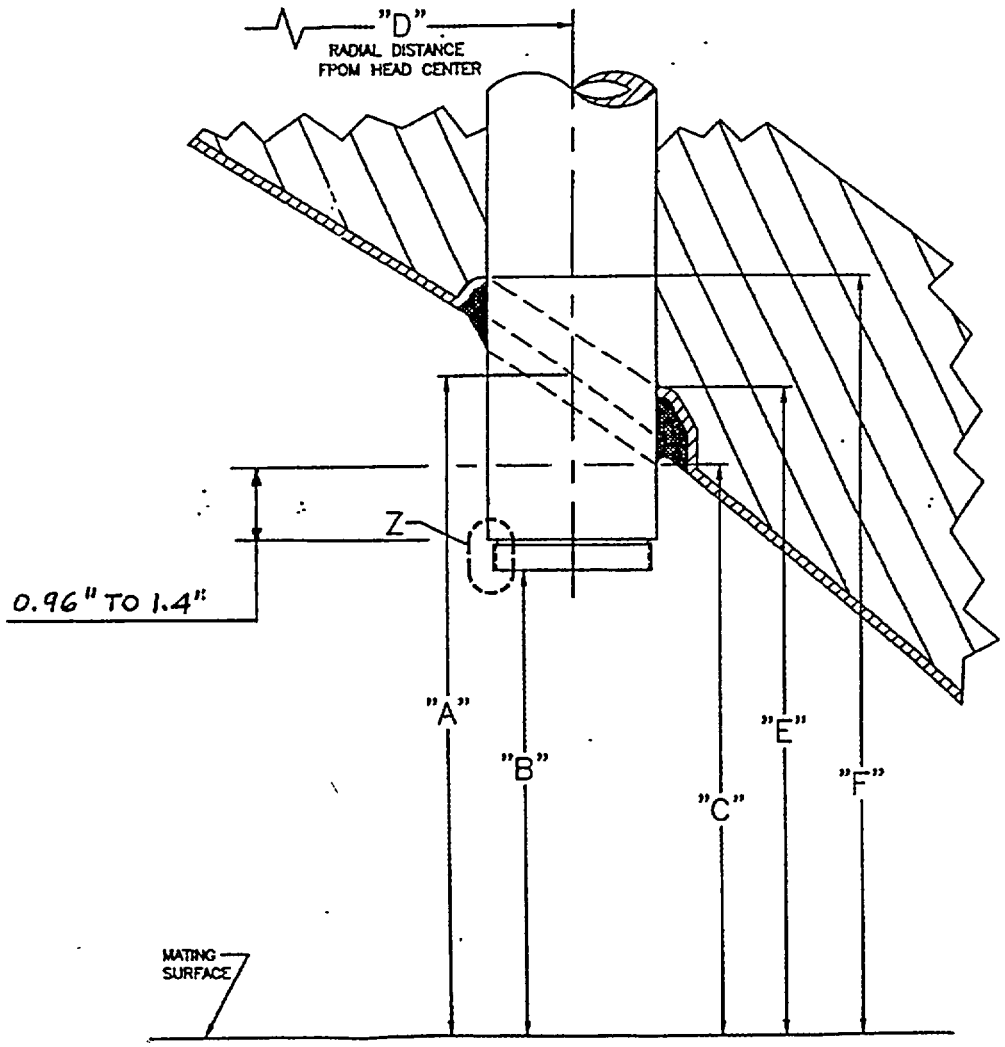
H. REFERENCES

1. ENO Letter, R. J. Barrett to USNRC dated December 19, 2002 (IPN-02-095), "Reactor Pressure Vessel Head and Penetration Nozzles Inspection Plan for Spring 2003 Refueling Outage".

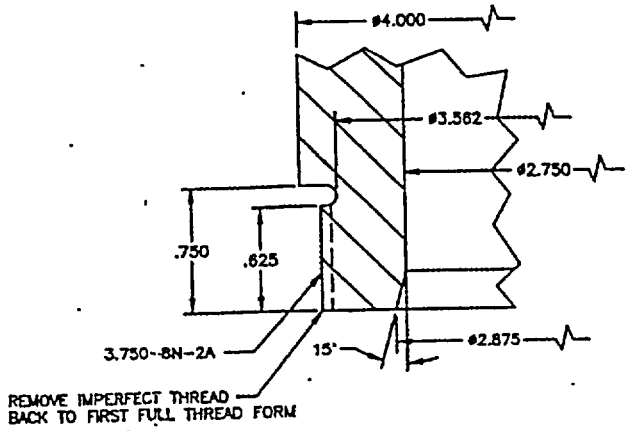
2. NRC Letter dated February 11, 2003, "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors," from Samuel J. Collins (NRC) to all Pressurized Water Reactor Licensees, dated February 11, 2003.

FIGURE 1

IP3 PENETRATION NOZZLES - HEAD NOZZLE WELD AREA



HEAD NOZZLE WELD AREA
SCALE: 1/4



DETAIL Z
SCALE: 2/1