A. Alan Blind
Vice President

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September 4, 2001

Re: Indian Point Unit No. 2
Docket No. 50-247
NL-01-106

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station O-P1-17
Washington, DC 20555-0001

Subject: Thirty-Day Response to NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles"

Reference:
1) NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," dated August 3, 2001.

2) "PWR Material Reliability Program Response to NRC Bulletin 2001-01," (MRP-48), EPRI, Palo Alto, California, 2001. TP-1006284 (Proprietary Version).

Pursuant to 10 CFR 50.54(f), Consolidated Edison Company of New York, Inc. (Con Edison) hereby provides its thirty-day response to NRC Bulletin 2001-01 (Reference 1) for Indian Point 2.

Con Edison recognizes the staff's concern regarding the potential safety implications of cracking in Alloy 600 reactor vessel head penetration nozzles, and is committed to providing a complete and appropriate resolution of this industry issue at Indian Point 2. Con Edison has been a participant of the EPRI PWR Materials Reliability Program (MRP) research, and endorses the integrated response to NRC Bulletin 2001-01 provided in the final EPRI MRP-48 report *PWR Materials Reliability Program Response to NRC Bulletin 2001-01,* TP-1006284 (Reference 2). At this time, Con Edison believes that this issue is not an imminent concern at Indian Point 2 based upon our MRP-48 "moderate susceptibility" ranking. This ranking is attributed to the lower reactor closure head and T_{avg} operating temperatures at Indian Point 2 compared to those plants in the higher susceptibility rankings.

Con Edison's response to NRC Bulletin 2001-01 is provided in Attachment 1. Due to the unique circumstances that the transfer of ownership and license holder for Indian Point 2 is expected to occur on September 6, only two days after the required

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response date, as well as the fact that the near term risk at Indian Point 2 is relatively low, Con Edison believes that the decisions and associated commitments regarding future inspection activities should be deferred for a brief transitional period. Therefore, bulletin requests 4a and 5 regarding future inspection plans for the Indian Point 2 vessel head penetration nozzles will be provided to the NRC by Entergy Nuclear Operations Inc.

No new regulatory commitments are being made by Con Edison in this correspondence.

Should you or your staff have any questions regarding this matter, please contact Mr. John McCann, Manager, Nuclear Safety & Licensing at (914) 734-5074.

Sincerely,

A. Alan Blind

Attachment

Signed under oath and affirmation
before me this 4 day
of September 2001.

Ersilia A. Amanna (Bowie)
Notary Public

ERSILIA A. AMANNA
Notary Public, State of New York
No. 01AM6036669
Qualified in Westchester County
Commission Expires March 20, 2002

C: Mr. Hubert J. Miller
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Mr. Patrick D. Milano, Senior Project Manager
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Mr. Paul Eddy
NYS Department of Public Service
3 Empire Plaza
Albany, NY 12223

ATTACHMENT 1

Thirty-Day Response to NRC Bulletin 2001-01

Consolidated Edison Company of New York, Inc.
Indian Point Unit No. 2
Docket No. 50-247

Requested Information

1. *All addressees are requested to provide the following information:*

a. *the plant-specific susceptibility ranking for your plant(s) (including all data used to determine each ranking) using the PWSCC susceptibility model described in Appendix B to the MRP-44, Part 2, report;*

b. *a description of the VHP nozzles in your plant(s), including the number, type, inside and outside diameter, materials of construction, and the minimum distance between VHP nozzles;*

c. *a description of the RPV head insulation type and configuration;*

d. *a description of the VHP nozzle and RPV head inspections (type, scope, qualification requirements, and acceptance criteria) that have been performed at your plant(s) in the past 4 years, and the findings. Include a description of any limitations (insulation or other impediments) to accessibility of the bare metal of the RPV head for visual examinations;*

e. *a description of the configuration of the missile shield, the CRDM housings and their support/restraint system, and all components, structures, and cabling from the top of the RPV head up to the missile shield. Include the elevations of these items relative to the bottom of the missile shield.*

Response 1a - Plant Specific Ranking

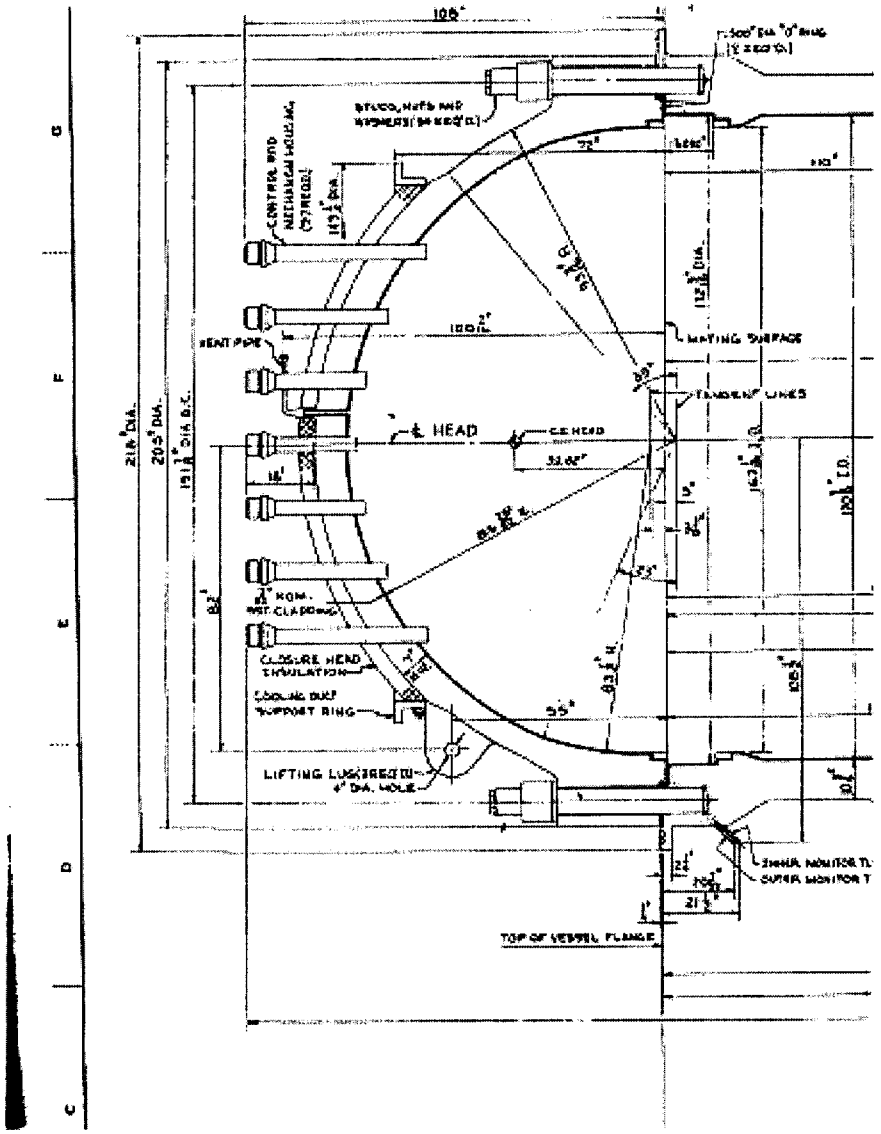
Indian Point 2 has been analyzed for susceptibility relative to Oconee 3 using the time-at-temperature model and plant-specific input data reported in MRP-48. The plant-specific susceptibility ranking for Indian Point 2 is provided in MRP-48, Table 2-1 (Reference 2). Indian Point 2 falls into the NRC category of plants greater than 5 EFPY and less than 30 EFPY relative to Oconee 3.

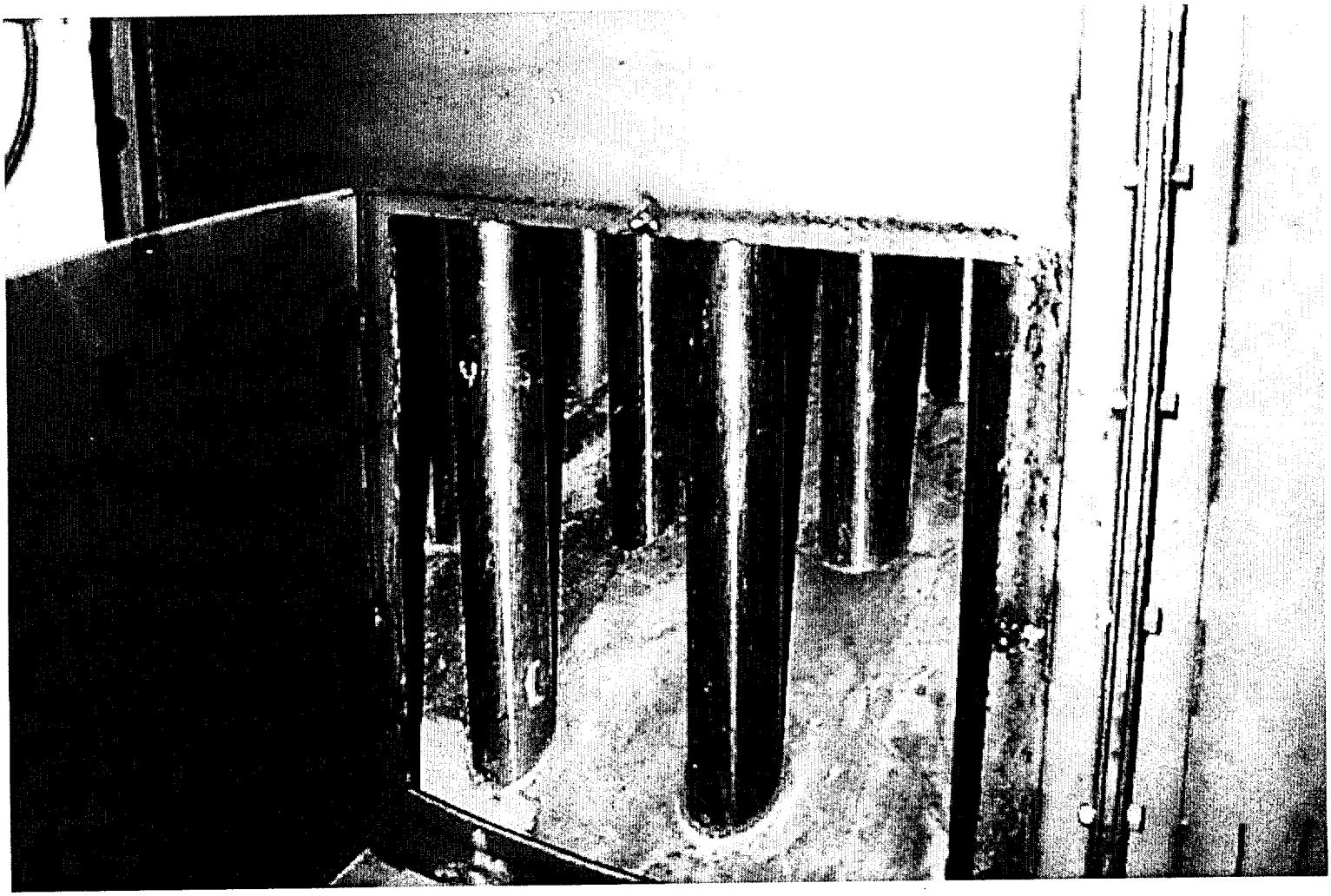
Response 1b - Description of Vessel Head Penetrations

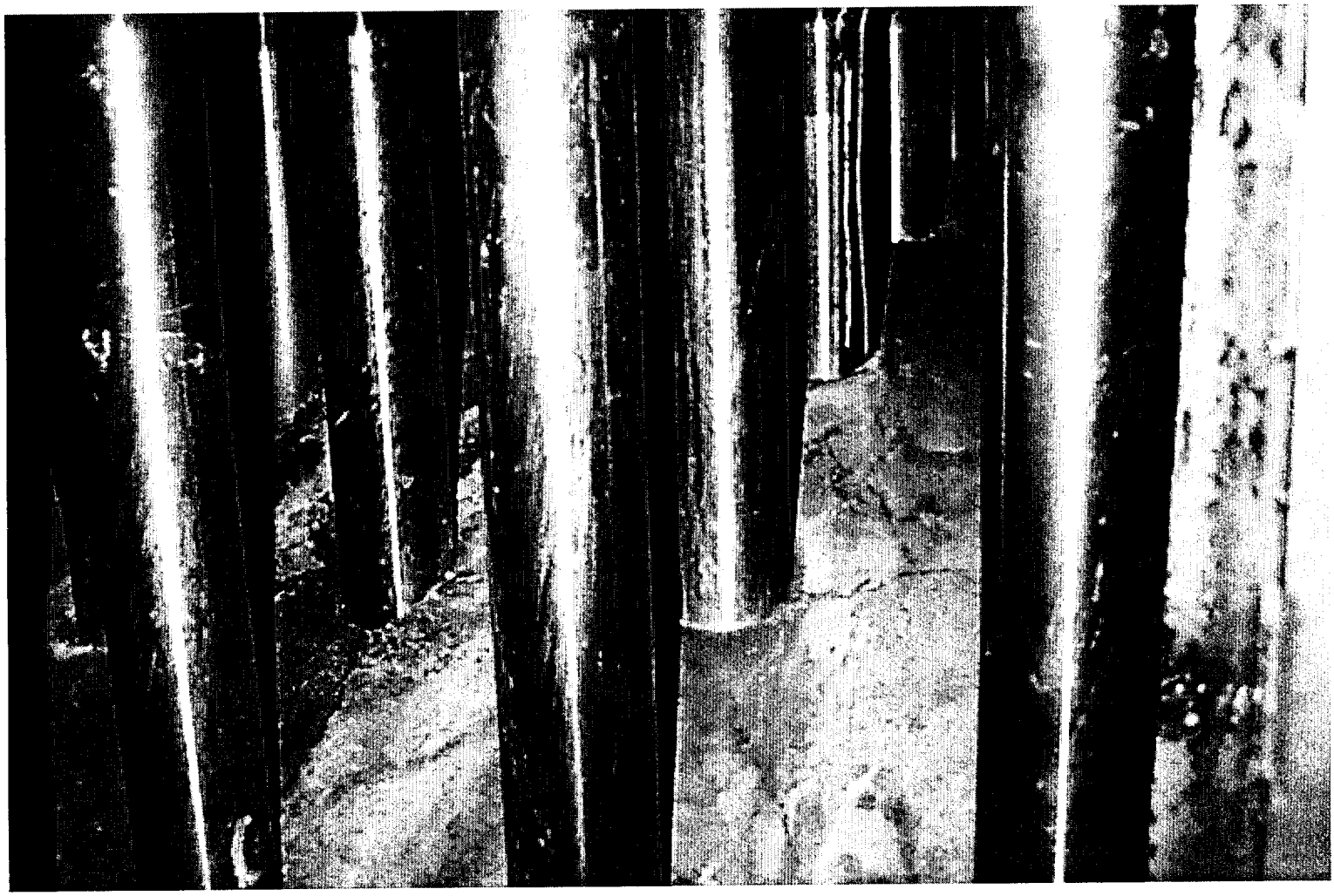
Indian Point 2 has 97 RPV head nozzles. The head arrangement and requested nozzle details are provided in Table 2-3 of MRP-48.

Response 1c - Description of Head Insulation

As reported in Table 2-1 of MRP-48, Indian Point 2 has encapsulated contoured RPV head insulation. The RPV head insulation is specified on plant documentation as Kaylo block 12" wide by 18" long by 3 1/4" thick. The Kaylo block was field cut to fit with gaps filled with asbestos cement and tape. The RPV head insulation is enclosed by the CRDM cooling shroud assembly. See installation detail and photographs of RPV head on following pages.


MATING SURFACE
TANGENT LINES
HEAD
VENT PIPE
CLOSURE HEAD INSULATION
LIFTING LUGS
TOP OF VESSEL FLANGE





Response 1d - Inspections Over the Past Four Years

Within the past four years Con Edison has performed three (3) visual inspections of the Indian Point 2 RPV head. These inspections were conducted in accordance with ASME B&PV Code Section XI 1989, IWA-2212, "Visual Examination VT-2," to comply with the requirements of Table IWB-2500-1, Category B-P, Item No(s) B15.10 and B15.11 for "Reactor Vessel." The examiners are qualified as specified in IWA-2300, "Qualification of Nondestructive Examination Personnel." The acceptance criteria specifies that there be no active leakage or evidence of (previous) leakage. Where relevant conditions are noted, the condition is reported and correction is required in accordance with IWB-3522.

As reported in Table 2-1 of MRP-48, Indian Point 2 has encapsulated contoured RPV head insulation. This insulation is original plant construction and comprised of Kaylo block insulation, which is installed with cement and tape containing asbestos material. The installation of this insulation and various obstructions does not permit visual inspection of the bare metal of the RPV head.

A summary of the results of the three visual examinations follows:

On July 1, 1997, during the performance of a system leakage test (PT-R75) following a refueling outage, evidence of dry boron was noted at the area of a Conoseal. The area was cleaned and no evidence of an active leak was found.

On August 28, 1998, while performing PT-R75 following an extended shutdown, visual inspection of the RPV head did not reveal any unsatisfactory conditions.

On December 26, 2000, while performing PT-R75 following a refueling outage, visual inspection of the RPV head did not reveal any unsatisfactory conditions.

Response 1e - Missile Shield Description

General Description

Westinghouse provided Indian Point 2's nuclear steam supply system (reactor, ECCS, reactor coolant pumps, etc.). The control rod drive mechanisms (CRDM) attach to the top of the head at the CRDM nozzles. The nozzles support the CRDM housings. The lower portions of the CRDM housings are enclosed by the CRDM cooling shroud assembly. The cables are supported (i.e., Rod Position Indication, CRDM, etc.) by the bedspring assembly located just below the missile shield. A superstructure frame supported by a concrete structure supports the missile shield. CRDM cooling fans and ducts are placed outside of the missile shield perimeter, except for cables.

Missile Shield

The Control Rod Drive (CRD) missile shield is a concrete and steel structure located directly

above the CRDMs and reactor vessel. It measures 17' x 17' x 4' thick. The missile shield consists of four interconnected (stepped) reinforced concrete blocks. Nelson studs were used to attach a 2-inch thick steel plate to the bottom of each block. Similarly, each concrete block /steel bottom plate was secured to two 24WF145 girders by 1-1/8 inch diameter bolts. The structural steel sub-framing includes 2-12WF40 and 2-12WF27 beams. The steel structure supporting the missile shield is anchored to the refueling floor at elevation 95' - 0". The bottom of the missile shield is at elevation 99'-5.25".

The reinforced concrete blocks were configured to utilize, to the extent possible, the resistance of the adjoining block to prevent lifting of the blocks (and subsequent drop onto the reactor vessel head) in the event of a postulated missile.

The CRD missile shield was installed to preclude damage to the containment liner and engineered safety features systems and components from missiles originating from a postulated rupture of a rod cluster control housing. The missile shield was designed as a Seismic Class I structure.

CRDM Housings and Their Support/Restraint System

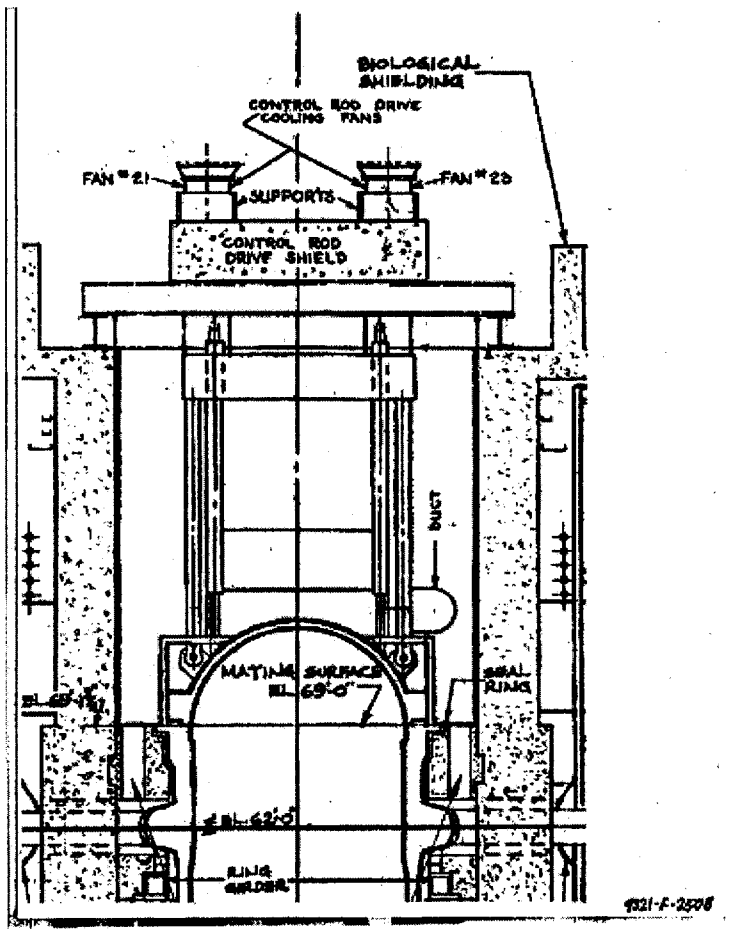
The CRDM housings are attached to the top of the CRDM nozzles at the top of the reactor vessel head.

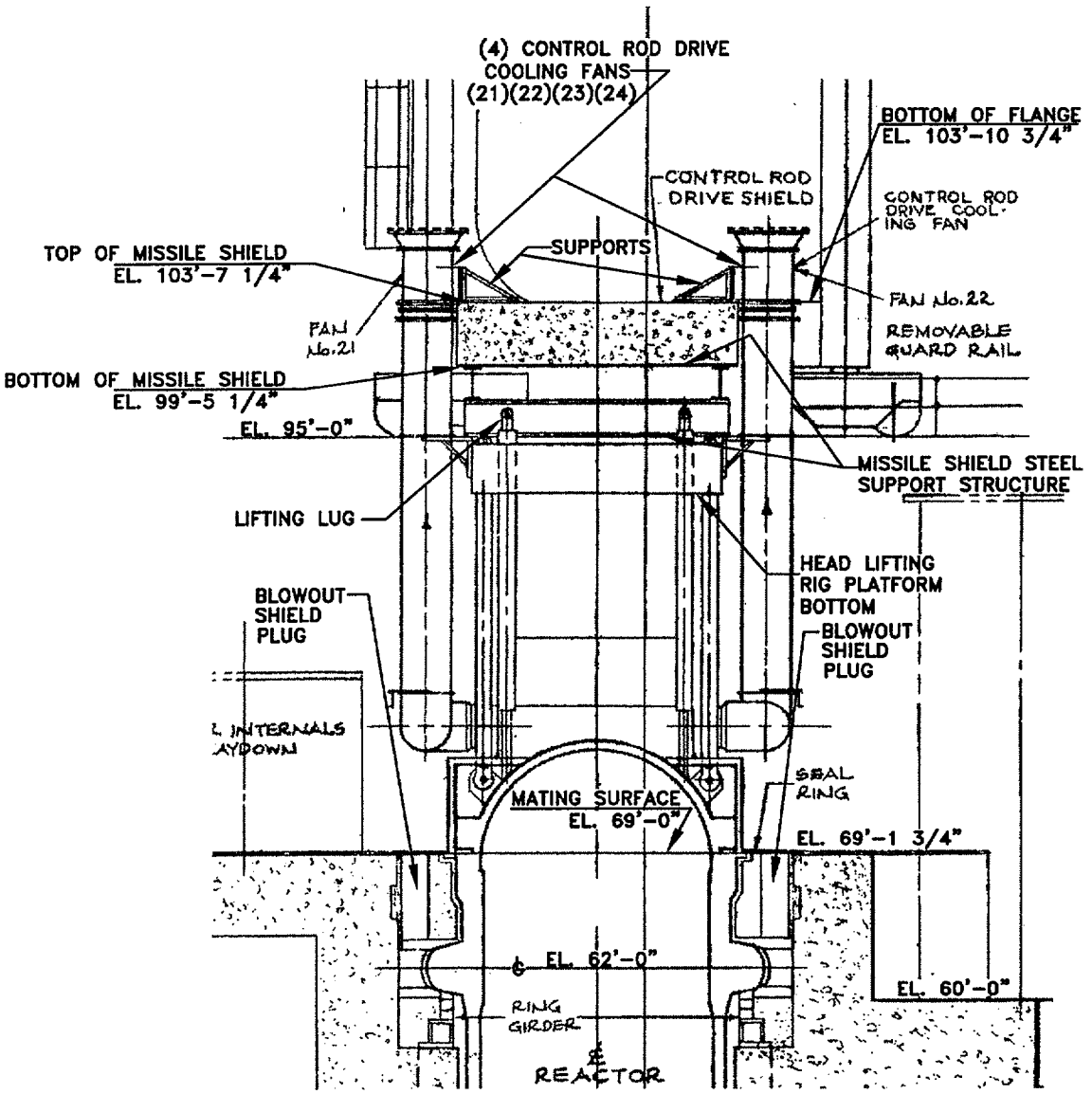
Electrical Cabling Arrangement and Other Components and Structures from Reactor Head to below Missile Shield

The incore thermocouple (TC) cables exit the RPV through five Conoseal assemblies at approximate elevations of 80' to 82'-8". These cables are routed from the Conoseals through flexible conduit up to the bedspring located just below the missile shield. The bedspring consists of a structural steel frame with messenger wires suspended within the frame. The messenger wires are placed in three layers in a grid pattern. The Rod Position Indicator (RPI) and CRDM cables are suspended from the messenger wires and are plugged into their respective RPI or CRDM connectors. The CRDM and RPI connectors are at an approximate elevation of 96' with the bedspring assembly at an approximate elevation of 96'-6.5" to 97'-6.5". There are two metal impact detectors on the reactor head lifting lugs at approximately elevation 74' with their cabling routed through the bedspring.

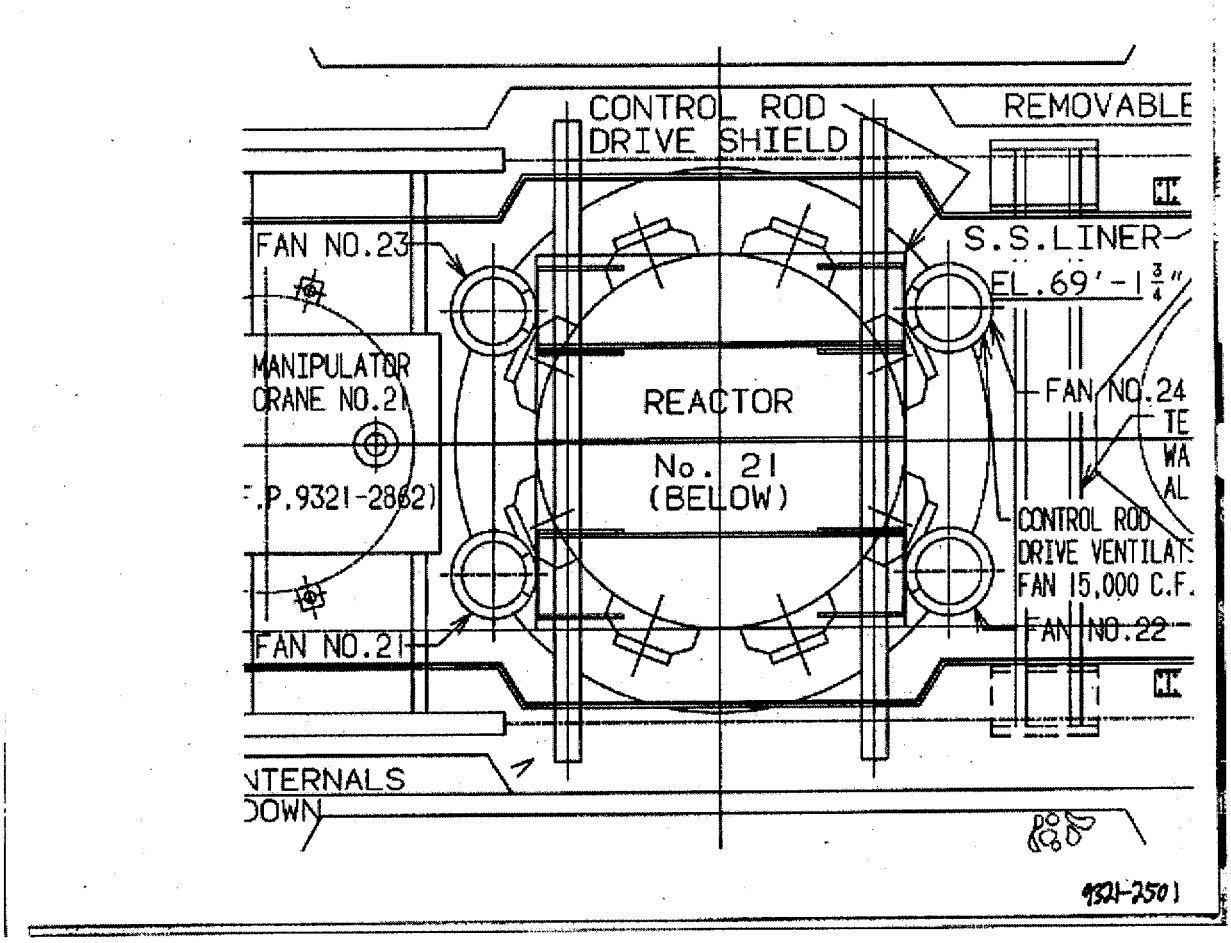
The four CRDM cooling fans are located on the outside of the missile shield support frame. The power cables to these fans are routed exposed across the top of the missile shield blocks to plug connectors located adjacent to the reactor cavity above elevation 95'.

See structural and equipment layout on following pages.


BIOLOGICAL SHIELDING
CONTROL ROD DRIVE COOLING FANS
FAN #21
FAN #23
SUPPORTS
CONTROL ROD DRIVE SHIELD
DUCT
MATING SURFACE EL. 69'-0"
SEAL RING
EL. 62'-0"
RING GIRDER



INDIAN POINT UNIT 2
(Not to scale)


CONTROL ROD
DRIVE SHIELD
REMOVABLE
FAN NO.23
S.S.LINER
EL.69'-1 3/4"
MANIPULATOR
CRANE NO.21
REACTOR
No. 21
(BELOW)
FAN NO.24
CONTROL ROD
DRIVE VENTILAT
FAN 15,000 C.F.
FAN NO.22
FAN NO.21
NTERNALS
DOWN
9321-2501

Requested Information

2. *If your plant has previously experienced either leakage from or cracking in VHP nozzles, addressees are requested to provide the following information:*

Response 2

Indian Point 2 has not previously experienced leakage from or cracking in VHP nozzles.

Requested Information

3. *If the susceptibility ranking for your plant is within 5 EFPY of ONS3, addressees are requested to provide the following information:*

Response 3

The MRP-48 susceptibility ranking for Indian Point 2 is greater than 5 EFPY of ONS3.

Requested Information

4. *If the susceptibility ranking for your plant is greater than 5 EFPY and less than 30 EFPY of ONS3, addressees are requested to provide the following information:*

   a. *your plans for future inspections (type, scope, qualification requirements, and acceptance criteria) and the schedule;*

   b. *your basis for concluding that the inspections identified in 4.a will assure that regulatory requirements are met (see Applicable Regulatory Requirements section). Include the following specific information in this discussion:*

      (1) *If your future inspection plans do not include a qualified visual examination at the next scheduled refueling outage, provide your basis for concluding that the regulatory requirements discussed in the Applicable Regulatory Requirements section will continue to be met until the inspections are performed.*

      (2) *The corrective actions that will be taken, including alternative inspection methods (for example, volumetric examination), if leakage is detected.*

Response 4a

This information will be provided later.

Response 4b

The technical basis for concluding that regulatory bases are met for Indian Point 2 is provided in MRP-48.

Requested Information

5. *Addressees are requested to provide the following information within 30 days after plant restart following the next refueling outage:*

   a. *a description of the extent of VHP nozzle leakage and cracking detected at your plant, including the number, location, size, and nature of each crack detected;*

   b. *if cracking is identified, a description of the inspections (type, scope, qualification requirements, and acceptance criteria), repairs, and other corrective actions you have taken to satisfy applicable regulatory requirements. This information is requested only if there are any changes from prior information submitted in accordance with this bulletin.*

Response 5

This information will be provided later.