



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
 WASHINGTON, D.C. 20555-0001

November 2, 1994

**MEMORANDUM TO:** Ashok Thadani, Associate Director  
 for Technical Assessment

**FROM:** G. Donald McPherson, Thermal Hydraulic Expert  
 Division of Systems Safety and Analysis

**SUBJECT:** OBSERVATIONS ON TECHNICAL MEETINGS WITH INDIAN DELEGATION  
 HELD AT OMFH DURING THE AFTERNOONS OF OCT 27 & 28, 1994

The discussions covered all topics requested by Indians, consuming somewhat more than the scheduled 9 1/2 hours. Indian delegates were very knowledgeable and showed an in-depth understanding of their reactor plants and their problems, and current NRC issues.

Among the topics selected for exchange, the Indian delegates were particularly interested in:

- BWR safety
- core shroud cracking
- comparing the Narora fire with the Salem overspeed and the Fermi turbine failures, as they compared with the Narora event.

Concerning this last item, they were particularly interested in the effects of turbine vibration, failure mechanisms of the Fermi turbines, consequential damages, efficacy of fire protection, system interactions, etc. (English Electric designed the Fermi and Narora turbine, plus those of 9 other Indian plants).

In the other areas that had been selected for exchange:

- operational analysis and evaluation
- accident management
- materials safety and safeguards
- severe accident research

their questions to the staff, and the mutual desire to expand in the aforementioned areas precluded presentations of their material. This did not concern our visitors who provided copies of their presentations materials. However we should consider including these topics on agenda of subsequent NRC visits to India.

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A. Thadani

Other points of interest included:

- there are two major concerns with the 25-year old Tarapur plants:

core shroud cracking which is resolvable in the short term, given good inspection and repair programs, and the existence of many auxiliary and safety systems shared by the two Tarapur units - a concern that can best be addressed by a probabilistic risk assessment. It was apparent India would be interested in NRC assistance in these areas.

- there are many claimants for damages received from injuries due to industrial and medical radiation exposures, seeking the assistance of the AERB.

Topics of interest identified for future exchange included:

- regulatory requirements for severe accidents
- Indian studies of passive safety systems
- operator training in accident management
- a 2-day visit to Warrora by fire safety specialists

cc: Holahan/Virgilfo

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cc: Nolan/Virgilio

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WASHINGTON, D.C. 20545-0001

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**DATE:** 11/2/94

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**DOCUMENT NAME: A:\MITSUMIND.MEM**



May 24, 1995

U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attn: Document Control Desk

Subject: Dresden Nuclear Station Units 2 and 3  
Design Documents for the Dresden Station Core Shroud Repair  
NRC Docket Nos. 50-237 and 50-249

Reference: J.L. Schrage letter to USNRC, dated March 30, 1995.

In the referenced letter, ComEd submitted the proposed inspection plan for the Dresden Station Unit 2 Core Shroud. This inspection plan was provided in response to Generic Letter 94-03, "Intergranular Stress Corrosion Cracking of the Core Shrouds in Boiling Water Reactors." This letter transmits the Design Documents for the proposed repair of the Dresden Station Unit 2 and 3 core shrouds. ComEd is presently planning to install the core shroud repair hardware into Dresden Station Unit 2 beginning on July 18, 1995 during the D2R14 refueling outage.

The Dresden Station Unit 2 and Unit 3 core shroud repair was developed in accordance with ASME Section XI repair and replacement program requirements. The design has been developed considering through-wall 360 degree circumferential cracks at the H1 through H8 welds. This modification does not remove the existing flaws, nor replace the flawed components, but rather structurally replaces the core shroud horizontal circumferential welds H1 through H7, and accounts for cracking of the H8 weld. The repair will be performed as an alternative to the ASME Section XI Code as permitted by 10 CFR 50.55a(a)(3). In accordance with requirements of the above reference, ComEd is submitting this alternative code repair for NRC review and approval.

Attachment 1 to this letter provides a detailed list of each core shroud repair design document, which are included as Enclosures 1 through 19. Please note that Enclosure 18 consists of 53 separate construction drawings of the core shroud repair hardware.

This submittal contains items which are proprietary in nature to the General Electric Nuclear Company. ComEd has specifically marked the portions of the submittal that are considered proprietary and requests that all material specifically marked as proprietary be withheld from public disclosure. ComEd has included, as Attachment 2, affidavits per the requirements of 10CFR 2.790(b) explaining the reasons and circumstances for withholding the applicable information from public disclosure.

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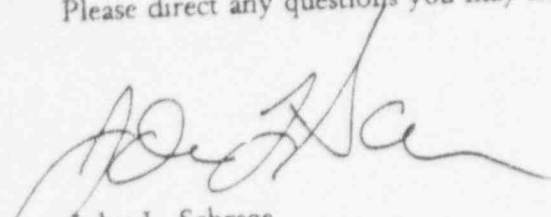
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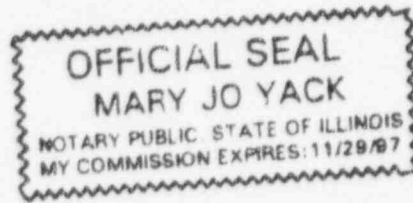
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May 24, 1995

To the best of my knowledge and belief, the statements contained in this response are true and correct. In some respects, these statements are not based on my personal knowledge, but obtained information furnished by other ComEd employees, contractor employees, and consultants. Such information has been reviewed in accordance with company practice, and I believe it to be reliable.

Please direct any questions you may have concerning this response to this office.

  
John L. Schrage  
Nuclear Licensing Administrator



Mary Jo Yack 5-24-95

Attachment 1 List of Dresden Unit 2 and Unit 3 Core Shroud Repair Design Documents

Enclosures 1 through 19 Dresden Unit 2 and Unit 3 Core Shroud Repair Design Documents

Attachment 2 Dresden Station Unit 2 and 3 Core Shroud Repair Design Documents - General Electric Company Affidavits

- cc: J. B. Martin, Regional Administrator - RIII
- M. N. Leach, Senior Resident Inspector - Dresden
- J. F. Stang, Project Manager - NRR
- Office of Nuclear Facility Safety - IDNS



## Attachment 1

The Dresden Station Unit 2 and Unit 3 core shroud repair Design Documents are provided in the following Enclosures:

- Enclosure 1. GENE Design Specification, 25A5688, Revision 2, "Dresden 2 and 3 - Shroud Stabilizer Hardware".
- Enclosure 2. GENE Code Design Specification, 25A5689, Revision 1, "Dresden 2 and 3 - Reactor Pressure Vessel".
- Enclosure 3. GENE Fabrication Specification, 25A5690, Revision 2, "Dresden 2 and 3 - Fabrication of Shroud Stabilizer".
- Enclosure 4. GENE Installation Specification, 25A5698, Revision 1, "Dresden 2 and 3 - Shroud Stabilizer Installation".
- Enclosure 5. GENE 771-81-1194, Revision 1, "Commonwealth Edison Company Dresden Nuclear Power Plant Units 2 & 3, Shroud and Shroud Repair Hardware Analysis, Volume I, Shroud Repair Hardware".
- Enclosure 6. GENE 771-81-1194, Revision 1, "Commonwealth Edison Company Dresden Nuclear Power Plant Units 2 & 3, Shroud and Shroud Repair Hardware Analysis, Volume II, Shroud".
- Enclosure 7. GENE-771-82-1194, Revision 1, Backup Calculations for Dresden Shroud Repair Shroud Stress Report for Commonwealth Edison Dresden Nuclear Power Station, Units 2 and 3
- Enclosure 8. GENE-771-83-1194, Revision 1, "Commonwealth Edison Company Dresden Nuclear Power Plant Units 2 & 3, Shroud and Shroud Repair Hardware Analysis, Shroud Repair Hardware Backup Calculation". (Proprietary information)
- Enclosure 9. GENE-771-84-1194, Revision 2, "Dresden Units 2 & 3, Shroud Repair Seismic Analysis". (Proprietary information)
- Enclosure 10. GENE 771-85-1194, Revision 2, "Dresden Units 2 & 3, Shroud Repair Seismic Analysis Backup Calculations". (Proprietary information)
- Enclosure 11. GENE Stress Report, 25A5691, Revision 2, "Pressure Vessel - Dresden Units 2 & 3".
- Enclosure 12. GENE 771-77-1194, Revision 2, "Shroud Repairs Program for Dresden Units 2 & 3 - Backup Calculations for RPV Stress Report No: 25A5691". (Proprietary information)
- Enclosure 13. GENE-771-95-0195, Revision 1, "Dresden Units 2 & 3 - Top Ring Plate and Star Truss Stress Analysis".
- Enclosure 14. GENE-771-96-0195, Revision 1, "Dresden Units 2 & 3, Top Ring Plate and Star Truss Analysis Backup Calculations". (Proprietary information)
- Enclosure 15. GENE-523-A181-1294, Revision 0, Commonwealth Edison Company Dresden Units 2 & 3 Nuclear Power Station, - Primary Structure Seismic Models.
- Enclosure 16. GENE Letter, M. D. Potter - GE Shroud Project Engineer to Kenneth Hutko - ComEd Shroud Project Engineer, Subject - Performance impact of shroud repair leakage for Dresden Units 2 & 3, dated May 18, 1995 (B13-01749, MDP-9536)
- Enclosure 17. 10CFR50.59 Safety Evaluation for Dresden Units 2 and 3 Core Shroud Repair
- Enclosure 18. Construction drawings
  - a. Reactor Modification/Installation Drawing 107E5719, Revision 5, Sheet 1 of 3, Reactor Assembly
  - b. Reactor Modification/Installation Drawing 107E5719, Revision 5, Sheet 2 of 3, Reactor Assembly
  - c. Reactor Modification/Installation Drawing 107E5719, Revision 5, Sheet 3 of 3, Reactor Assembly
  - d. Assembly Drawing 112D6636, Revision 1, Sheet 1 of 1, Bracket Yoke Assembly
  - e. Detail Drawing 112D6637, Revision 0, Sheet 1 of 1, Lock, Bolt
  - f. Assembly Drawing 112D6638, Revision 0, Sheet 1 of 1, Lower Stabilizer Assembly
  - g. Assembly Drawing 112D6639, Revision 0, Sheet 1 of 1, Toggle Bolt Assembly

## Attachment 1 (cont.)

- h. Assembly Drawing 112D6640, Revision 0, Sheet 1 of 1, Tie Rod Assembly
- i. Assembly Drawing 112D6641, Revision 1, Sheet 1 of 1, Stabilizer Support Assembly
- j. Assembly Drawing 112D6642, Revision 1, Sheet 1 of 1, Upper Stabilizer Assembly
- k. Detail Drawing 112D6643, Revision 1, Sheet 1 of 1, Latch
- l. Detail Drawing 112D6644, Revision 0, Sheet 1 of 1, Screw, Mid Support
- m. Detail Drawing 112D6645, Revision 0, Sheet 1 of 1, Ring, Mid support
- n. Detail Drawing 112D6646, Revision 0, Sheet 1 of 1, Washer, Jack Bolt
- o. Detail Drawing 112D6647, Revision 0, Sheet 1 of 1, Sleeve, Jack Bolt
- p. Detail Drawing 112D6648, Revision 0, Sheet 1 of 1 Retainer
- q. Detail Drawing 112D6649, Revision 0, Sheet 1 of 1, Nut, Top Support
- r. Detail Drawing 112D6650, Revision 0, Sheet 1 of 1, Bolt, Top Support
- s. Detail Drawing 112D6651, Revision 1, Sheet 1 of 1, Pin
- t. Detail Drawing 112D6652, Revision 1, Sheet 1 of 1, Nut, Tie Rod
- u. Detail Drawing 112D6653, Revision 0, Sheet 1 of 1, Pin, Clevis
- v. Detail Drawing 112D6655, Revision 1, Sheet 1 of 1, Extension, Lower Spring
- w. Detail Drawing 112D6656, Revision 0, Sheet 1 of 1, Screw, Yoke
- x. Detail Drawing 112D6657, Revision 0, Sheet 1 of 1, Bracket, Upper Spring
- y. Detail Drawing 112D6658, Revision 0, Sheet 1 of 1, Clip, Retainer
- z. Detail Drawing 112D6659, Revision 0, Sheet 1 of 1, Bolt, Jack
- aa. Detail Drawing 112D6660, Revision 0, Sheet 1 of 1, Nut, Toggle Bolt
- ab. Detail Drawing 112D6661, Revision 0, Sheet 1 of 1, Washer, Toggle Bolt
- ac. Detail Drawing 112D6662, Revision 0, Sheet 1 of 1, Pin, Toggle Bolt
- ad. Detail Drawing 112D6663, Revision 0, Sheet 1 of 1, Toggle
- ae. Detail Drawing 112D6664, Revision 0, Sheet 1 of 1, Support, Lower
- af. Detail Drawing 112D6665, Revision 0, Sheet 1 of 1, Bolt, Toggle
- ag. Detail Drawing 112D6666, Revision 0, Sheet 1 of 1, Contact, Upper
- ah. Detail Drawing 112D6667, Revision 0, Sheet 1 of 1, Contact, Lower
- ai. Detail Drawing 112D6668, Revision 2, Sheet 1 of 1, Support
- aj. Detail Drawing 112D6669, Revision 1, Sheet 1 of 1, Upper Support, Long
- ak. Detail Drawing 112D6670, Revision 2, Sheet 1 of 1, Spring, Upper
- al. Detail Drawing 112D6671, Revision 2, Sheet 1 of 1, Spring, Lower
- am. Detail Drawing 112D6672, Revision 1, Sheet 1 of 1, Rod, Tie
- an. Assembly Drawing 112D6673, Revision 0, Sheet 1 of 1, Tie Rod-Spring Assembly
- ao. Detail Drawing 112D6674, Revision 0, Sheet 1 of 1, Spring, Retainer
- ap. Detail Drawing 112D6675, Revision 0, Sheet 1 of 1, Bracket Yoke
- aq. Detail Drawing 112D6676, Revision 2, Sheet 1 of 1, Upper Support Short
- ar. Detail Drawing 112D6677, Revision 0, Sheet 1 of 1, Nut, Lock
- as. Detail Drawing 112D6678, Revision 0, Sheet 1 of 1, Bolt, Torsion Arm
- at. Detail Drawing 112D6679, Revision 0, Sheet 1 of 2, Arm, Torsion
- au. Detail Drawing 112D6679, Revision 0, Sheet 2 of 2, Arm, Torsion
- av. Assembly Drawing 112D6680, Revision 1, Sheet 1 of 1, Mid Support Assembly
- aw. Detail Drawing 112D6681, Revision 2, Sheet 1 of 1, Support, Mid-Shroud
- ax. Assembly Drawing 112D6734, Revision 1, Sheet 1 of 1, Core Plate Wedge Assy
- ay. Detail Drawing 112D6735, Revision 1, Sheet 1 of 1, Wedge, Core Plate
- az. Detail Drawing 112D6736, Revision 1, Sheet 1 of 1, Clip, Core Plate
- ba. Detail Drawing 112D6737, Revision 1, Sheet 1 of 1, Bolt, Wedge

Enclosure 19. One color picture of a computer model of the core shroud repair installed at Quad Cities.

## Attachment 2

### General Electric Nuclear Company Affidavits

General Electric Company Affidavit of proprietary information (DJR-QCAF5951.DOC),  
By D. J. Robare Dated May 19, 1995

General Electric Company Affidavit of proprietary information (DJR-QCAF5951.DOC),  
By B. G. Stramback Dated May 23, 1995