May 6, 1994

Docket Nos. 50-237, 50-249,
and 50-254, 50-265

Mr. D. L. Farrar
Manager, Nuclear Regulatory Services
Commonwealth Edison Company
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1400 OPUS Place
Downers Grove, Illinois 60515

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Docket File	NRC & Local PDRs
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Dear Mr. Farrar:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION CONCERNING CORE SHROUD CRACKING AT DRESDEN, UNITS 2 AND 3, AND QUAD CITIES, UNITS 1 AND 2

As a followup to the telephone conversation on May 5, 1994, between the NRC staff and Commonwealth Edison staff concerning the cracking of the core shrouds at the Dresden and Quad Cities Station, please provide answers to the enclosed questions concerning core shroud cracking. You should be prepared to address the plant-specific questions by May 23, 1994. This schedule is based on a meeting to discuss resolution of the shroud cracking, tentatively scheduled for the week of May 23, 1994. Please provide a response in writing to all questions within 30 days following receipt of this letter. Additional generic questions concerning core shroud cracking will be sent to you under a separate cover.

If you have any questions concerning this action, please contact me at (301) 504-1345.

Sincerely,

Original Signed By J. Dyer for
John F. Stang, Project Manager
Project Directorate III-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
See next page

OFC	LA:PDIII-2	PM:PDIII-2	PM:PDIII-2	D:PDIII-2	ADR3:DRPW	D:DRPW
NAME	CHAWES CNH	JSTANG	CPATEL CP	JDYER DWV	JZWOLINSKI	JROE
DATE	5/16/94	5/16/94	5/16/94	5/16/94	1/94	1/94
COPY	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO

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D01

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ENCLOSURE

REQUEST FOR ADDITIONAL INFORMATION

CONCERNING CORE SHROUD CRACKING AT

DRESDEN, UNITS 2 AND 3, AND QUAD CITIES, UNITS 1 AND 2

DOCKET NOS. 50-237, 50-249, 50-254, AND 50-265

Plant-Specific Questions Regarding Dresden Unit 3 and Quad Cities Unit 1

1. Describe the methods, scope, and results of the inspections that have been performed at Dresden 3 and Quad Cities 1. Include in this discussion the types of inspections performed (e.g. visual, ultrasonic) and the lengths and depths (where characterized) of the detected indications.

2. Provide information on the qualification and expected reliability of the testing methods used (e.g. visual, ultrasonic). Describe qualifications that have been performed on mock-ups including the configurations of the mock-ups and their applicability to the crack locations in the Dresden and Quad Cities core shrouds. Describe any limitations in the locations that can be inspected and for the ultrasonic testing technique describe any limitations in quantifying crack depths.

3. Provide results of the fracture mechanics evaluations of the detected cracks including calculated margins to failure and the sensitivity of these margins to nondestructive testing uncertainty and assumed crack growth rates.

4. Discuss how bypass leakage through the shroud at various elevations can be detected and responded to during normal operating conditions. Discuss the adequacy of plant operating procedures and operator training with regard to the above.

5. Evaluate the safety significance of a 360° through wall failure at the H5 weld location in the core shroud during: (a) normal operation; (b) anticipated transients; and (c) postulated accident conditions. Include evaluation of the design basis loss-of-coolant accident combined with safe-shutdown earthquake loads (LOCA + SSE). This evaluation should address questions such as: (a) estimated potential shroud movement vertically or laterally; (b) control rod scram capability; (c) boron injection capability; (d) short & long term core cooling capability, including core spray capability; and (e) ability to maintain 2/3 core coverage with bypass leakage at various elevations.

6. Describe the methods, scope, and results of inspections conducted on reactor vessel internal components other than the core shroud. Discuss the safety significance of any indications found in these components and how these indications were dispositioned.

7. Identify reactor vessel internal components or portions of those components that were not or cannot be inspected and have potential safety significance. Discuss the potential consequences of cracking in these locations. Discuss plans for developing inspection methods and repairs for these components.

8. Describe repair options for cracks at various locations in the core shroud. Include discussion of actions to achieve ALARA personnel exposure and provide estimates of exposure levels associated with each repair option.

Plant-Specific Questions Regarding Dresden Unit 2 and Quad Cities Unit 2

1. Discuss the scope and results of any prior core shroud or other vessel internals inspections conducted at these units.

2. Identify any differences between these units and Dresden Unit 3 and Quad Cities Unit 1 with regard to core shroud geometry, materials, fabrication methods, operating times, water chemistry or other factors affecting susceptibility to cracking.

3. Discuss existing procedures and operator training for monitoring for core shroud bypass flow or other indications of vessel internals failures.

4. Provide an evaluation of the safety significance of a 360° through wall failure at each weld location in the core shroud during normal operation, anticipated transient, and postulated accident conditions. Include evaluation of the design basis loss-of-coolant accident combined with safe-shutdown earthquake loads (LOCA + SSE). This evaluation should address questions such as: (a) estimated potential shroud movement vertically or laterally; (b) control rod scram capability; (c) boron injection capability; (d) short & long term core cooling capability, including core spray capability; and (e) ability to maintain 2/3 core coverage with bypass leakage at various elevations.

5. Discuss the adequacy of emergency procedures and operator training with regard to design basis accident conditions with postulated core shroud failure and by-pass flow.