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50-270 Oconee Nuclear Station, Unit 2, Duke Power Co.      05000270

50-287 Oconee Nuclear Station, Unit 3, Duke Power Co.      05000287

AUTH. NAME      AUTHOR AFFILIATION

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RECIP. NAME      RECIPIENT AFFILIATION

HAMPTON, J.W.      Duke Power Co.

*94-16*

SUBJECT: Discusses enforcement conference on 940629 in NRC region II ofc re situations of inadequate control over fuel refueling activities at plants. List of attendees & presentation handout encl.

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TITLE: Summary of Significant Meeting with Licensee (Part 50)

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JUL 13 1994

Docket Nos. 50-269, 50-270, 50-287  
License Nos. DPR-38, DPR-47, DPR-55

Duke Power Company  
ATTN: Mr. J. W. Hampton  
Vice President  
Oconee Site  
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Seneca, SC 29679

Gentlemen:

SUBJECT: ENFORCEMENT CONFERENCE SUMMARY - OCONEE  
(NRC INSPECTION REPORT NOS. 50-269/94-16, 50-270/94-16 AND  
50-287/94-16)

This refers to the enforcement conference conducted in the NRC Region II office on June 29, 1994, to discuss recent instances of inadequate control over refueling activities. A list of attendees and a copy of your presentation handout are enclosed.

Your presentation was beneficial in clarifying the issues associated with the apparent violation identified in our inspection report. We are continuing our review of this apparent violation to determine the appropriate enforcement action.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice", a copy of this letter and its enclosures will be placed in the NRC Public Document Room.

Should you have any questions concerning this letter, please contact us.

Sincerely,

/s/

Ellis W. Merschoff, Director  
Division of Reactor Projects

Enclosures:

1. List of Attendees
2. Licensee Presentation Handout

cc w/encls: (See page 2)

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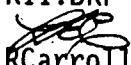
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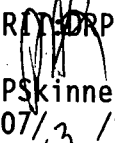
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07/13 /94

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ENCLOSURE 1

LIST OF ATTENDEES

NRC Attendees

- L. Reyes, Deputy Regional Administrator, Region II (RII)
- E. Merschhoff, Director, Division of Reactor Projects (DRP), RII
- B. Mallett, Deputy Director, Division of Reactor Safety, RII
- M. Sinkule, Chief, Reactor Projects Branch 3, RII
- B. Uryc, Director, Enforcement & Investigation Coordination Staff (EICS), RII
- L. Watson, EICS, RII
- M. Satorius, Office of Enforcement, NRC
- P. Harmon, Senior Resident Inspector, Oconee
- G. Humphrey, Resident Inspector, Oconee
- V. Nerses, Project Manager, Division of Reactor Projects I/II, Nuclear Reactor Regulation
- R. Watkins, Project Engineer, DRP, RII

Duke Power Company Attendees

- B. Peele, Station Manager, Oconee Nuclear Station (ONS)
- J. Hampton, Vice President, ONS
- S. Benesole, Compliance Manager, ONS
- W. Foster, Mechanical Maintenance, ONS
- T. Saville, Section Manager, ONS
- L. Howell, Fuel Handling, ONS
- R. Heineck, Maintenance, ONS
- G. Davenport, Operations, ONS

**OCONEE NUCLEAR SITE**

**FUEL HANDLING**

**ENFORCEMENT CONFERENCE**

**JUNE 29, 1994**

# AGENDA

**Introduction**

**Jim Hampton**

**Fuel Misposition Event**

**Jack Peele**

**Sequence of Events**

**History of Process**

**Corrective Actions**

**Safety Significance**

**Summary**

**Fuel Movement Event**

**Jack Peele**

**Sequence of Events**

**Corrective Actions**

**Safety Significance**

**Summary**

**Closing Statement**

**Jim Hampton**

## **EXAMPLES CITED**

### **FUEL MISPOSITIONING**

**On May 26, 1994, a fuel assembly was found to have been loaded into the wrong position in Oconee 1 core.**

### **FUEL MOVEMENT**

**On May 25, 1994, a fuel assembly was transported through two intermediate locations enroute to its final destination in Oconee 1 core.**

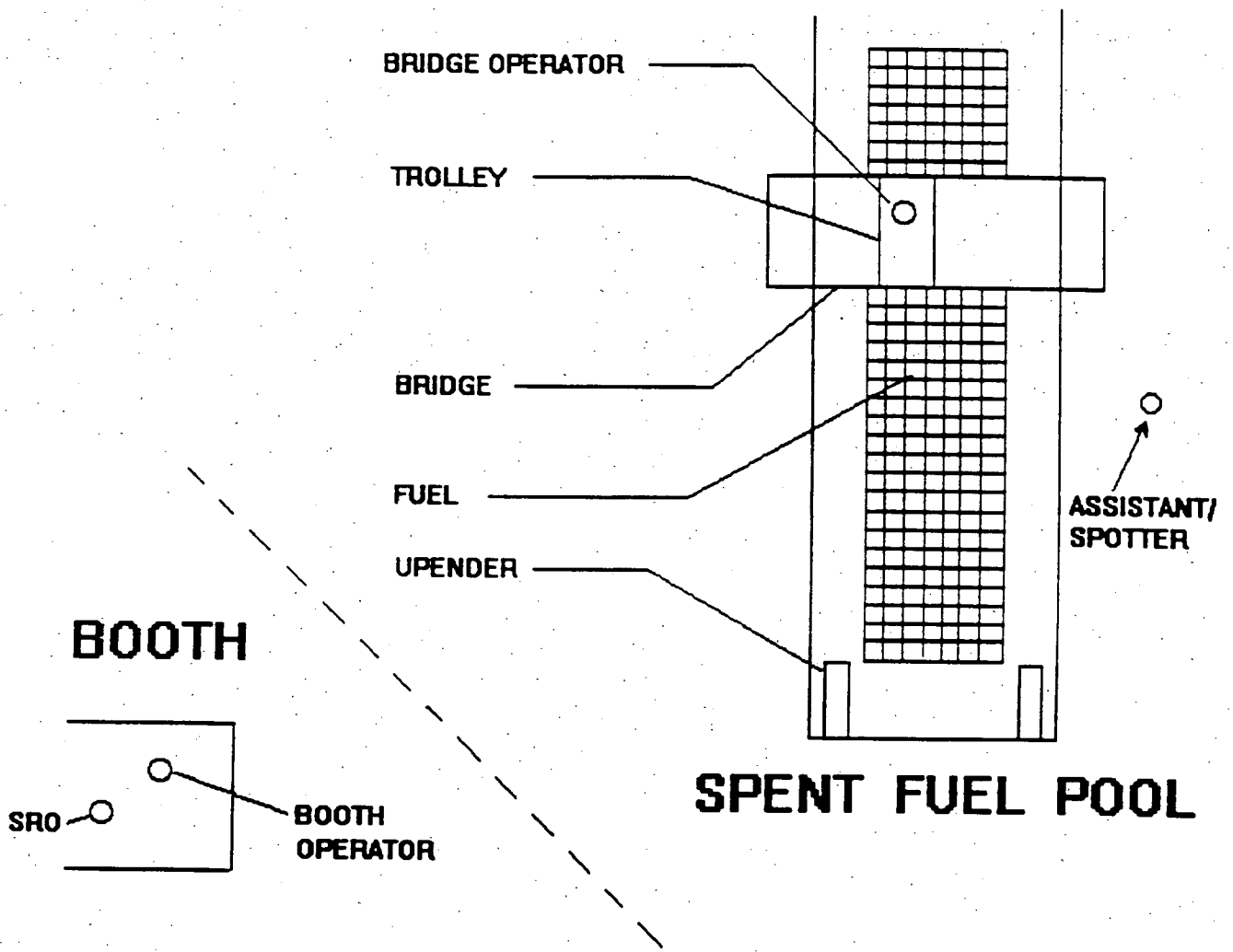


## **FUEL MISPOSITION**

### **SEQUENCE OF EVENTS**

- **On May 26, 1994, reloading of Oconee 1 reactor core was in progress.**
- **Refueling team in Spent Fuel Pool was directed to a location to obtain a fuel assembly and found the cell empty.**
- **Investigation revealed that a reload assembly had been erroneously selected during a previous procedure step, and placed in an incorrect core location.**

# FUEL HANDLING PLAN VIEW



# FUEL MISPOSITION

## HISTORY OF PROCESS

- **Prior to 1991**
  - **Bridge operator told assistant the destination and asked for help positioning the bridge.**
  - **Bridge operator positioned the trolley.**
  - **Assistant was also looking for obstructions.**
  - **Independent verification was via the final core verification.**
- **After 1991**
  - **Assistant was given working copy of procedure.**
  - **Bridge location indexed by laser light on wall.**

## FUEL MISPOSITION

### HISTORY OF PROCESS (continued)

- After 1992
  - Used an independent spotter who did not have a procedure.
  - Added trolley location index clearly visible to spotter.
  - New communications sequence used.
- 1994
  - Apparent human factors weakness, allowing spotter to inadvertently overhear destination.

## FUEL MISPOSITION

### CORRECTIVE ACTIONS

- The Unit 1 fuel assembly position was corrected.
- Maintenance Superintendent convened both shifts at next turnover to reinforce expectations.
- Station Manager reviewed fuel handling in SFP and RB with particular attention to role of spotter.
- Procedure was changed so that bridge operator is instructed to execute next step, rather than to go to next location by name. Has been tested on Unit 1 APSR swaps and worked well.
- Video camera will be added at SFP upenders as backstop to confirm fuel assembly identity.

## FUEL MISPOSITION

### SAFETY SIGNIFICANCE

We recognize the importance of accurate fuel handling. Misposition of any fuel assembly or component is outside our expectations.

Safety significance of this event was low because there are multiple other barriers precluding an accident:

- **Barriers to Fuel Assembly Damage**
  - Empty cell is verified by procedure.
  - Fuel mast has interlocks based on weight being supported.
- **Barriers to Inadvertent Criticality**
  - Neutron count rate is closely monitored prior to ungrappling.

## FUEL MISPOSITION

### SAFETY SIGNIFICANCE (continued)

- **Boron concentration is maintained in canal.**
- **Multiple positioning errors would be needed in order to create a problem.**
- **New fuel is typically loaded in checkerboard pattern.**
- **Barriers to Reactor Startup with Wrong Core Loading**
  - **Errors tend to be self-revealing because reload is staged together in the pool, and verified prior to reloading.**
  - **Full core loading is verified prior to placing RV head.**

## **FUEL MISPOSITION**

### **SUMMARY**

- **The error was detected and promptly corrected by the refueling crew.**
- **Previous corrective actions had given us a substantially improved, although not perfect, refueling procedure.**
- **Corrective actions for this event are both redundant and diverse.**
- **Low safety significance due to multiple barriers inherent in our refueling process.**



## **FUEL MOVEMENT**

### **SEQUENCE OF EVENTS**

- **Nuclear Instrumentation was replaced as part of upgrade to Reg Guide 1.97.**
- **Detector sensitivity was measured to assess whether regenerative source could be omitted in future cores. Desirable for reducing waste, exposure.**
- **Detector response from multiple fuel assembly positions was desired in order to increase confidence in the data.**

## **FUEL MOVEMENT**

### **SEQUENCE OF EVENTS (continued)**

- **Use of a procedure revision was considered, and determined not to be necessary.**
- **Written engineering instructions were in hand.**
- **Author of the instructions was present.**
- **SRO understood and concurred with intended steps.**
- **No other assemblies would be adjacent or nearby.**

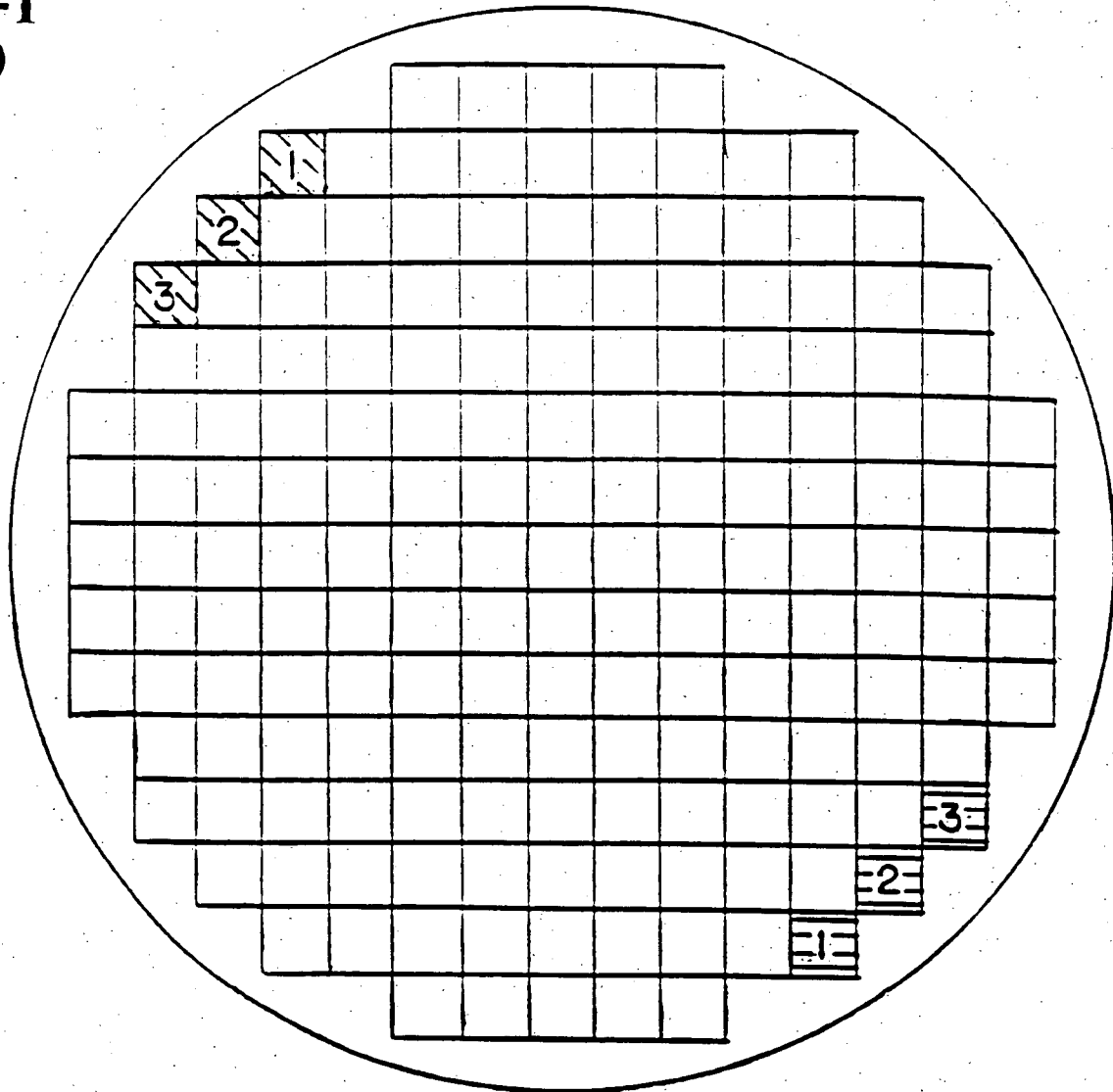
## FUEL MOVEMENT

### SEQUENCE OF EVENTS (continued)

- Fuel assemblies involved were twice-burned.
- Assemblies were not to be ungrappled. (This would have required alternate steps.)
- The first fuel assembly was loaded into the core.
- In response to questions from Resident Inspector, "alternate steps" per procedure were used for the second assembly.
- Steps for additional assemblies were not performed, due to detector maintenance in progress.

# OCONEE UNIT 1

NI-1



NI-2



**Fuel Assembly ID No. 585**



**Fuel Assembly ID No. 587**



**Initial Position**



**Second Position**



**Final/Reload Position**

## **FUEL MOVEMENT**

### **SAFETY SIGNIFICANCE**

**Safety significance of this evolution was minimal:**

- **A potential accident sequence for this event could not be identified.**
- **The steps for the first fuel assembly were accomplished, as intended, without incident.**
- **Those involved in the decision were the same persons who would have implemented a procedure revision.**

## FUEL MOVEMENT

### CORRECTIVE ACTION

- "Alternate steps" per procedure were used for the second assembly.
- SROs, whose duties could include fuel handling oversight, and Reactor Engineering group will be briefed on future expectations.

## **FUEL MOVEMENT**

### **SUMMARY**

- **The correct steps were specified and performed.**
- **In retrospect, use of procedure revision would have been more appropriate in this case.**
- **Minimal safety significance.**