

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W., SUITE 2900  
ATLANTA, GEORGIA 30323-0199



Report No.: 50-261/93-35

Licensee: Carolina Power and Light Company  
P. O. Box 1551  
Raleigh, NC 27602

Docket No.: 50-261

License No.: DPR-23

Facility Name: H. B. Robinson Unit 2

Inspection Conducted: November 22 - December 3, 1993

Lead Inspector: W. T. Orders, Senior Resident Inspector 12/17/93  
Date Signed

Other Inspectors: C. R. Ogle, Resident Inspector

Approved by: H. O. Christensen 12/17/93  
Date Signed  
H. O. Christensen, Chief  
Reactor Projects Section 1A  
Division of Reactor Projects

SUMMARY

Scope:

This special inspection consisted of a review of an event which occurred on November 22, 1993, in which your "A" diesel generator did not achieve the required voltage when started and the "B" diesel generator would not start during testing.

## REPORT DETAILS

### 1. Persons Contacted

- \*R. Anderson, Vice President Brunswick Nuclear Plant
- \*S. Billings, Technical Aide, Regulatory Compliance
- \*B. Clark, Manager, Maintenance
- \*T. Cleary, Manager, Technical Support
- \*A. McCauley, Manager, Electrical Systems, Technical Support
- \*M. Pearson, Plant General Manager
- \*R. Wallace, Manager, Licensing

Other licensee employees contacted included technicians, operators, engineers, mechanics, and office personnel.

\*Attended Exit Interview

### 2. Event Summary

On the morning of November 22, 1993, the licensee was performing a routine surveillance test on the "A" emergency diesel generator (EDG). They discovered that the generator voltage regulator was mis-adjusted to 440 volts as opposed to the required 480 volts. The licensee adjusted the voltage regulator and successfully completed the test. Later that morning the licensee attempted to perform the same test on the "B" EDG when it was discovered that the engine would not roll when starting air was applied.

The licensee failed to determine how the voltage regulator on the "A" EDG became mis-adjusted, but concluded that two of the six pilot air valves in the air start distributor on the "B" diesel had seized, which had prevented starting air from being injected into two cylinders, and had resulted in the engine's failure to start. Ultimately, the air start distributor was repaired and the diesel returned for service on November 29, 1993.

### 3. System Description

Engineered safety features (ESF) equipment is connected to 480 volt emergency buses E1 and E2. Each emergency bus has a dedicated EDG; diesel "A" for bus E1 and diesel "B" for bus E2.

The EDGs are Fairbanks Morse twelve cylinder, opposed piston engines coupled to 2500 KW, 480 VAC generators. Engine starting is accomplished with compressed air applied to the first six cylinders of the engine. The starting air is applied to the individual cylinders through the operation of six air start check valves on the air start header. The air start check valves are actuated by pneumatic signals from pilot valves contained in the air start distributor.

The diesels are designed to start and reach rated speed and voltage within 10 seconds. The EDGs are designed to start 900 hp of motor load within a single load block and to pick up full rated load within 45 seconds.

The EDGs are designed to start automatically on receipt of a safety injection (SI) signal, sensed undervoltage on the associated 480 volt bus, or a manual start command.

#### 4. Event Details

During the conduct of safeguards systems testing on October 25, 1993, the "B" EDG failed to start. Initial troubleshooting efforts failed to detect the cause for this failure. The engine was started twice without incident on October 26. Subsequent troubleshooting revealed that the springs for the air start distributor pilot air valves associated with cylinders 2, 4, and 6 were broken. The broken springs were sent to the Carolina Power and Light Environmental and Education Center for evaluation to determine the failure mechanism. At the end of this inspection, that evaluation had not been completed.

On October 27, the diesel was successfully started after temporary replacement springs were installed. (The springs were obtained from the training diesel, were not qualified, and were therefore considered "temporary".) Later that day, the diesel successfully started during performance of a scheduled technical specification required surveillance test.

Two days later on October 29, the diesel was again successfully started during post maintenance testing after all the pilot air valve springs were exchanged with new qualified replacements. The diesel was successfully started again on November 8 during routine surveillance testing.

On November 12, 1993 the licensee initiated a startup of the reactor following the completion of refueling outage 15. On November 14, following completion of low power physics testing, the unit was placed on line and reactor power increased to 30 percent power.

On November 16, the licensee detected that a weld on a main feedwater drain valve was leaking. Ultimately the licensee was forced to shut the unit down on November 17, to repair the leak.

On the morning of November 22, 1993, the licensee performed a routine surveillance test on the "A" EDG. They discovered that the generator voltage regulator was mis-adjusted to 440 volts as opposed to the required 480 volts. The licensee adjusted the voltage regulator and successfully completed the test. The licensee initiated an evaluation to determine if the diesel generator could perform its intended safety function with the voltage regulator mis-adjusted. At the conclusion of this inspection, that evaluation was not complete.

Later on the morning of November 22, the licensee attempted to perform the same surveillance test on the "B" EDG when it was discovered that the engine would not roll when starting air was applied. The licensee declared the machine inoperable, quarantined the diesel generator rooms, and assembled a team to evaluate the failure of the diesel.

On the following day, November 23, the licensee requested vendor assistance. The licensee, aided by the vendor representative, concluded that the number 2 and 6 pilot air valves had bound and that the failure was most probably due to debris in the system. The debris was believed to be from other corrosion products in the pilot valve caps, or fragments of the aforementioned broken springs.

The next day, November 24, a cleanliness inspection of air start distributor was performed including blowing air through the associated system piping but no attempt was made to capture debris. Later that day repairs were completed and operations personnel successfully tested the diesel. It should be noted that when the EDG was tested, the licensee determined that, similar to the "A" EDG, the generator voltage regulator was mis-adjusted to 450 volts as opposed to the required 480 volts. The licensee is also evaluating the "B" diesel generator to determine if it could perform its intended safety function with the voltage regulator mis-adjusted. At the conclusion of this inspection, that evaluation was incomplete.

On November 28, after operations personnel performed fast and slow speed starts of the EDG and licensee management had reviewed the maintenance actions that had been performed, the "B" diesel was declared operable.

## 5. Conclusions

- a. Technical Specification 3.7.1.d requires, in part, that the reactor shall not be made critical unless two diesel generators are operable. Implicit in the definition of "operable" is the requisites that the diesel generators, start, achieve the design rated speed and produce the required voltage output.

On November 22, 1993, the licensee determined that the "A" EDG would produce only 440 volts as opposed to the required 480 volts and that the "B" EDG would not start. By definition, this implies that both EDGs were inoperable.

The EDGs were previously tested and known to be operable on November 8, 1993. Between November 8 and November 22, 1993, the reactor was made critical and operated at power levels up to 30 percent for a period of 5 days.

Given the above, it appears that both EDGs were inoperable simultaneously when the unit was at power. This is an apparent violation of the above referenced Technical Specification.

- b. During the conduct of safeguards systems testing on October 25, 1993, the "B" EDG failed to start. Subsequent troubleshooting revealed that the springs for the pilot air valves associated with cylinders 2,4, and 6, in the air start distributor were broken. The springs were replaced and the EDG was returned to service.

On the morning of November 22, 1993, the licensee was performing a routine surveillance test on the "B" EDG when it was discovered that the engine would not roll when starting air was applied.

The licensee concluded that the numbers 2 and 6 pilot air valves had bound and that the failure mode was most probably due to debris in the system. The licensee believes that the debris was either corrosion products in the pilot valve caps, or fragments of the aforementioned broken springs. Either of these two causes are indicative of inadequate corrective action related to the event of October 25 and as such is an apparent violation of 10 CFR 50, Appendix B, Criterion XVI.

#### 6. Exit Interview

The inspection scope and findings were summarized on December 2, 1993, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection findings listed below and in the summary. There were no dissenting comments from the licensee. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

#### Item Number

#### Apparent Violation

93-35-01

Both EDGs Inoperable Simultaneously When Unit Was at Power.

93-35-02

Inadequate Corrective Action Related to Event of October 25, 1993.

### I. Criteria For Selecting Open Enforcement Conferences

Enforcement conferences will not be open to the public if the enforcement action being contemplated—

- (1) Would be taken against an individual, or if the action, though not taken against an individual, turns on whether an individual has committed wrongdoing;
- (2) Involves significant personnel failures where the NRC has requested that the individual(s) involved be present at the conference;
- (3) Is based on the findings of an NRC Office of Investigations (OI) report or (4) Involves safeguards information, Privacy Act information, or other information which could be considered proprietary.

Enforcement conferences involving medical misadministrations or overexposures will be open assuming the conferences can be conducted without disclosing the exposed individual's name. In addition, enforcement conferences will not be open to the public if the conference will be conducted by telephone or the conference will be conducted at a relatively small licensee's facility. Finally, with the approval of the Executive Director for Operations, enforcement conferences will not be open to the public in special cases where good cause has been shown after balancing the benefit of public observation against the potential impact on the agency's enforcement action in a particular case.

The NRC will strive to conduct open enforcement conferences during the two-year trial program in accordance with the following three goals:

- (1) Approximately 25 percent of all eligible enforcement conferences conducted by the NRC will be open for public observation;
- (2) At least one open enforcement conference will be conducted in each of the regional offices; and
- (3) Open enforcement conferences will be conducted with a variety of the types of licensees.

To avoid potential bias in the selection process and to attempt to meet the three goals stated above, every fourth eligible enforcement conference involving one of three categories of licensees will normally be open to the public during the trial program. However, in cases where there is an ongoing adjudicatory proceeding with one or more intervenors, enforcement conferences involving issues related to the subject matter of the ongoing adjudication may also be opened. For the purposes of this trial program, the

three categories of licensees will be commercial operating reactors, hospitals, and other licensees, which will consist of the remaining types of licensees.

### II. Announcing Open Enforcement Conferences

As soon as it is determined that an enforcement conference will be open to public observation, the NRC will orally notify the licensees that the enforcement conference will be open to public observation as part of the agency's trial program and send the licensee a copy of this Federal Register notice that outlines the program. Licensees will be asked to estimate the number of participants it will bring to the enforcement conference so that the NRC can schedule an appropriately sized conference room. The NRC will also notify appropriate State liaison officers that an enforcement conference has been scheduled and that it is open to public observation.

The NRC intends to announce open enforcement conferences to the public normally at least 10 working days in advance of the enforcement conference through the following mechanisms:

- (1) Notices posted in the Public Document Room;
- (2) Toll-free telephone messages; and
- (3) Toll-free electronic bulletin board messages.

Pending establishment of the toll-free message systems, the public may call (301) 488-6732 to obtain a recording of upcoming open enforcement conferences. The NRC will issue another Federal Register notice after the toll-free message systems are established.

To assist the NRC in making appropriate arrangements to support public observation of enforcement conferences, individuals interested in attending a particular enforcement conference should notify the individual identified in the meeting notice announcing the open enforcement conference no later than five business days prior to the enforcement conference.

### III. Conduct of Open Enforcement Conferences

In accordance with current practice, enforcement conferences will continue to normally be held at the NRC regional offices. Members of the public will be allowed access to the NRC regional offices to attend open enforcement conferences in accordance with the "Standard Operating Procedure For Providing Security Support For NRC Hearings And Meetings" published November 1, 1991 (56 FR 53231). These procedures provide that visitors may be

subject to personnel screening, that signs, banners, posters, etc., not larger than 18" be permitted, and that disruptive persons may be removed.

Each regional office will continue to conduct the enforcement conference proceedings in accordance with regional practices. The enforcement conference will continue to be a meeting between the NRC and the licensee. While the enforcement conference is open for public observation, it is not open for public participation.

Persons attending open enforcement conferences are reminded that (1) the apparent violations discussed at open enforcement conferences are subject to further review and may be subject to change prior to any recalling enforcement action and (2) the statements of views or expressions of opinion made by NRC employees at open enforcement conferences or the lack thereof, are not intended to represent final determinations or beliefs.

In addition to providing comments on the agency's trial program in accordance with the guidance in this notice, persons attending open enforcement conferences will be provided an opportunity to submit written comments anonymously to the regional office. These comments will subsequently be forwarded to the Director of the Office of Enforcement for review and consideration.

Dated at Bethesda, MD, this 7th day of July 1992.

For the Nuclear Regulatory Commission.

Samuel J. Chalk.

Secretary of the Commission.

[FR Doc. 92-16233 Filed 7-9-92; 8:45 a.m.]

MAILING CODE 750-07-0

51754

## Corrections Federal Register

Vol. 57, No. 133

Friday, July 17, 1992

### NUCLEAR REGULATORY COMMISSION

#### Two-Year Trial Program for Conducting Open Enforcement Conferences; Policy Statement

#### Correction

In notice document 92-16233 beginning on page 30763 in the issue of Friday, July 10, 1992, on page 30762 in the second column, under **DATE**, beginning in the fifth line, "July 11, 1992" should read "July 11, 1991".

MAILING CODE 750-07-0