



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report No. 50-261/81-03

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, NC 27602

Facility Name: H. B. Robinson 2

Docket No. 50-261

License No. DPR-23

Inspection at H. B. Robinson site near Hartsville, South Carolina

Inspected by: A. K. Hardin 2/10/81
A. K. Hardin Date Signed

Approved by: P. J. Kellogg 2/10/81
P. J. Kellogg, Section Chief RONS Branch Date Signed

SUMMARY

Inspection on January 13-22, 1981

Areas Inspected:

This routine, unannounced inspection involved 76 inspector-hours on site in the areas of Licensee Event Reports, Operations, Open and Unresolved items.

Results:

Of the three areas inspected, no violations or deviations were identified in two areas. Two violations were identified in one area, failure to have an adequate procedure, paragraph 6; and failure to adequately maintain procedures, paragraph 9.

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DETAILS

1. Persons Contacted

Licensee Employees

*R. B. Starkey, Jr., General Manager

*F. Lowery, Operations Supervisor Unit 2

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 22, 1981 with those persons indicated in Paragraph 1 above. The two items of non-compliance in paragraphs 6 and 9 were discussed with the licensee. The licensee did not question the validity of the cited noncompliances.

3. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item 261/80-28-01, "Use of a Potentially Incorrect Value for Sub-Cooling Margin". See paragraph 10b.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Anticipated Transient Without Scram (ATWS)

The purpose of this portion of the inspection was to determine the existence of adequate emergency procedures for coping with ATWS events. The licensee was asked to list any emergency procedures that address any of the following plant conditions.

- a. Failure to scram when required.
- b. Failure to complete scram when initiated automatically or manually.
- c. Inability to move or drive control rods.
- d. Failure to automatically scram when a parameter exceeds its trip value.
- e. Criteria for use of Standby Liquid Control System or Emergency Boration System.
- f. Reactor trip or scram.
- g. Anticipated transient without scram.

The licensee provided the following data:

Item a - None, Implied in Emergency Instruction E.I.14

Item b - None, Implied in EI-14

Item c - Abnormal Procedure, A.P. 1.1

Item d - None

Item e - Abnormal Procedure, A.P.2

Item f - EI-14 A or B

Item g - None

The inspector reviewed the above listed procedures and in addition a review was made of Standing Orders and Administrative Instructions dealing with Shift Foreman responsibilities and Control Operator responsibilities.

The following summary findings were made based on the above review.

- a. Of the four types of procedures reviewed, i.e., Emergency Instruction-Abnormal Procedures, Administrative Instructions, and Standing Orders, there is no requirement which clearly and unequivocally states:

"If an automatic scram should have occurred and has not, depress the scram button immediately".
- b. Abnormal Procedure AP-2 entitled "Emergency Boration" requires in item B.4. that emergency boration be initiated if two or more rod position indicators fail to indicate rods are inserted after a plant shutdown.
- c. There is no written procedure which specifically requires that if rods fail to move, the power disconnect switch or breaker to the holding coils shall be opened.
- d. The criteria for use of the emergency boration system relative to the inability to insert negative reactivity by other means is included in Abnormal Procedure AP-2. The operator has the authority and responsibility for meeting the procedure and initiating emergency boration when confronted with the conditions described in the procedure.

During the inspection and at the exit interview, the inspector discussed the above findings. The inspector stated the procedures were insufficiently specific in some areas. Specifically, a clear requirement to manually trip the reactor when a parameter exceeds its trip value without occurrence of an automatic trip and immediate actuation of the manual scram button if a partial or total rod failure to insert on demand occurs. The licensee stated their personnel are trained and are expected to respond to failures of the scram system by taking

immediate manual action. In addition, the licensee stated all licensed personnel, when in training on the simulator, are trained in an event wherein rods failed to enter on a demand trip. The licensee agreed that putting specific statements requiring a manual trip on failure of an automatic trip into the emergency procedures was appropriate and they would take immediate steps to revise their emergency procedures. Prior to leaving the site, the licensee gave the inspector a copy of their proposed revised procedures designed to be specific in coping with failure of the reactor to scram when required. The inspector commented that the revised procedures appeared to deal adequately with the assumed failures, but would delay final judgement pending approval of the revised procedures by the Plant Nuclear Safety Committee (261/81-03-01).

6. De-energized Heat Trace Circuits

At 9:35 A.M. on January 14, the licensee issued a clearance to work on boric acid transfer pump "A". Work on a boric acid pump requires shutdown of the heat trace circuits. The instructions for work on Boric Acid Transfer Pump "A" are contained in Robinson's Operations Work Procedure CVC-6 in Revision 5 of Standing Order No. 9. The clearance was placed in accordance with the procedure as interpreted by the operator. About two hours later an I and C Technician performing a daily periodic test on heat tracing noted heat trace circuits for both the "A" and "B" Boric Acid Transfer Pump were de-energized. The I and C Technician reported the condition to the shift foreman. Reactor shutdown was started in accordance with 10-CFR-50.36(c)(2) since Technical Specification 3.2.3.c, which requires at least one operable channel of heat tracing on the flow path from the boric acid tanks, could not be met.

Reactor power had been reduced 25 mw when heat tracing was restored to the "B" pump. The temperature in the line did not go below 175°F compared to a limit of 145°F and flow through the line was demonstrated in that the reactor was being shutdown by borating with the "B" pump.

The loss of heat tracing was caused by an inadequate clearance procedure which was interpreted to authorized opening the breakers on E1 primary and E1 secondary. These breakers also de-energize E2 primary and E2 secondary and Circuit 5 primary and secondary which are the heat trace circuits for the "B" pump and the filter respectively. The licensee stated the intent of the procedure was that the fuses would be pulled for the affected heat trace circuits rather than open the breakers. At the exit interview, the licensee was informed that the failure to have an adequate procedure for work on the heat trace circuits of the Boric Acid Transfer Pumps was a violation of Technical Specification 6.8.1.

7. Licensee Event Reports

The following LER's were reviewed to ascertain that reporting requirements were met, appropriate corrective action was taken, and that the event was

evaluated and reviewed by licensee personnel in accordance with approved procedures and administrative controls.

- LER No. 80-029, "Packing Leak On RHR Valve No. 750"
- LER No. 80-028, "Primary System Leak on Auxiliary Pressurizer Spray Valve CVC-311"
- LER No. 81-003, "Inoperable Heat Tracing On Boric Acid Transfer Pumps "

8. Emergency Diesel Generator Repairs

During the 1980 Refueling Outage, a Fairbanks Morse Inspector inspected the two emergency diesel generator units (Fairbanks Morse Model 38T08 1/8) at the Robinson site.

The licensee reported that during the inspection of the piston rings through the cylinder exhaust ports of "A" standby unit, water was discovered on the piston rings which led the Fairbanks Morse inspector to make a more in-depth inspection of the piston and cylinder liners. As a result, nine pistons and six cylinder liners were found to be severely eroded. The erosion in the cylinder liners is around the injection nozzle openings and the piston erosion is on the top surface. During the replacement of the six eroded cylinder liners and nine pistons, it was found that the remaining six cylinder liners had plugged water jacket openings around the injection nozzles. Removal of this fiber, gasket type material was accomplished but not knowing the extent of how much remained, the other six cylinder liners were also replaced.

The same in-depth inspection of "B" standby unit revealed six eroded cylinder liners and fifteen eroded pistons in the same areas as on unit "A". There was no indication of plugged water jacket openings in unit "B". The six eroded cylinder liners, the fifteen eroded pistons and, as a precautionary measure, the remaining six cylinder liners were replaced.

The licensee believes the probable cause of the eroded cylinder liners and pistons is water leakage in and around the injection nozzles. The licensee sent an upper and lower piston and a cut-out middle section of a cylinder liner to Fairbanks Morse Company for evaluation of the failure. The material found in the water jackets, a sample of the cooling water and a fuel oil sample were sent to the Harris Energy Center for analysis.

Results from the Fairbanks Morse analysis of the occurrence had not been received at the close of the inspection. The material found in the water jackets was determined to be gasket material. No problem was detected with the cooling water or fuel oil.

Based on oral discussions with Fairbanks Morse, the licensee has been informed that the problem is not generic. The licensee stated they would

expedite action from Fairbanks Morse. The inspector expressed concern that the present diesel inspection procedure did not contain adequate steps to assure detection of the type of problem found on the Robinson diesels and stated the item would be left open pending the Fairbanks Morse Report and a subsequent inspection.

The degradation of the cylinder liners and pistons did not result in failure or noticeable loss of efficiency of the emergency diesel generators at the H. B. Robinson 2 plant, but did represent a degrading condition that could, if undetected, eventually have resulted in loss of operability. 261/81-03-03.

9. Annunciator Panel Review

The inspector reviewed the Reactor Turbine Generator Control Board (RTGB) Annunciators. A licensed operator was requested to accompany the inspector and discuss the status of each alarm. The following annunciators were observed to be in the alarm mode.

<u>ANNUNICATOR NUMBER</u>	<u>ANNUNICATOR TITLE</u>	<u>REASON FOR ALARM</u>
A-1-16	Abnormal Pressure Vs. Temperature 456	Pressurizer Motor Operated Block Valve 456 Closed
A-1-24	Abnormal Pressure Vs. Temperature 455-C	Pressurizer Motor Operated Block Valve 455C Closed
A-1-29	Spent Fuel Pit level low	Level was low - water was being added.
D-4-25	Diesel Oil Storage Tank Level Low 80%	Faulty Sensor, tank level was 87%. Trouble ticket issued.
A-2-40	Motor Driven Fire Pump Running or trouble	Fire pump actually running due to low Header Pressure. Water being used for clean-up purposes.
A-3-39	Pressurizer Liquid - Vapor Hi-Temp	Pressurizer Vapor Temperature TI 454 failed high
C-1-48	Hot Penetration Cooling, low flow	Flow Verified to be adequate Trouble Ticket issued.
D-1-29	Feedwater Header Pressure low	Pressure is low, due to high flow rate required to sustain 2300 MW operation

D-2-31	Screen level Differential High	Due to high water level in circulating intake pump Valve Pit Sump
D-2-32	Reheater A/B Power Lost Drain Tank Level High	Controller problems, Drain Tank Level High - Trouble Ticket issued.
D-2-40	E-H Temp Low	Due to Cold Weather
D-3-33	Boric Acid Heat trace trouble	Boric acid evaporator heat trace problem being reviewed by Auxiliary Operator.
D-3-11	Hydrogen Temperature high	Temperature apparently correct for increased MWe output of generator. High set point revision is under consideration.
D-4-38	Diesel Room "B" Cooling Fan OL Temp. high	Sensor failure. Trouble ticket issued.

A further review of licensee Annunciator procedures was made. No procedures were available for the window entitled Abnormal Pressurizer Pressure. This window is in panel A-1 position 16 which formerly contained "N-2 Header" for which a procedure is present in annunciator procedure manual.

In addition, several discrepancies were observed between the titles displayed in the annunciators windows and the titles shown in the annunciator procedures. The most significant of these are indicated in the listing below.

<u>ANNUNCIATOR NUMBER</u>	<u>ANNUNCIATOR PROCEDURE WINDOW DISPLAY</u>	<u>ACTUAL ANNUNCIATOR WINDOW DISPLAY</u>
B-1-35	SPARE	Reactor coolant pump high vibration
D-1-22	BLANK	N2 Header
D-3-31	BLANK	Generator low frequency
D-4-33	MSRA's	"B" Waste Evaporator

In view of the several discrepancies between the Annunciator Alarm windows and the procedures, the inspector stated the items appeared to constitute noncompliance with Technical Specification 6.8.1 which requires written

procedures and administrative policies shall be established, implemented, and maintained that meet or exceed the requirements and recommendations of Sections 5.1 and 5.3 of ANSI N18.7-1972 and Appendix "A" of USNRC Regulatory Guide 1.33 dated November 3, 1972.

The licensee commented they had already started on correcting the omissions observed in the Annunciator procedure. 261/81-03-04.

10. Open Items

- a. (Closed) 261/80-25-01, Administrative Instruction update to reflect organizational changes of Technical Specification Amendment No. 46 has been accomplished.
- b. (Closed) 261/80-28-01, Following review of NRR communications with CPL on the subject of subcooling margin and of CPL's response and definition of 40°F as the plant specific valve for the subcooling limit prior to termination of HPI is satisfactory.