



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

Report No.: 50-261/89-03

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

Inspection Conducted: January 11 - February 10, 1989

Inspector: HC Dance / for 3/10/89
 L. W. Garner, Senior Resident Inspector Date Signed

HC Dance / for 3/10/89
 K. R. Jury, Resident Inspector Date Signed

Approved by: HC Dance 3/10/89
 H. C. Dance, Section Chief Date Signed
 Reactor Projects Section 1A
 Division of Reactor Projects

SUMMARY

Scope: This routine, announced inspection was conducted in the areas of operational safety verification, physical protection, surveillance observation, maintenance observation, ESF system walkdown, and onsite review committee.

Results: One violation for which a Notice of Violation is being issued was identified concerning failure to properly implement surveillance procedure OST-162, paragraph 3.c. The failure resulted from improperly controlling the OST-162 test configuration valve lineup while performing the valve restoration lineup portions of surveillance procedure OST-163.

Two licensee identified violations (no Notices of Violation are being issued) involving failure to follow procedures are discussed in paragraphs 2 and 3.c. The first violation involved an operator verifying a circuit breaker associated with instrument bus 3 as being ON when it was actually in the OFF position. The inspectors observed a second operator discover this fact while he was performing independent verification activities. The method and conditions under which this alignment is performed is considered awkward and prone to human error, and is being reviewed by the licensee. The second violation involved an operator failing to restart safety-related

battery charger A in accordance with procedure OP-601. Failure to open the A battery charger output breaker prior to re-energizing the battery charger resulted in degraded mode operation. In addition, a failure to utilize redundant indications was observed (i.e., the operator failed to notice the battery charger was malfunctioning). He only relied on an indicator lamp to verify the battery charger was inservice, when other readily available indications revealed it was not performing correctly.

A potential need to provide refresher training to control room operators on certain auxiliary operator evolutions is discussed in paragraph 3.c. A licensed operator was observed not being familiar with manually closing a DB-50 breaker during a surveillance test.

The licensee demonstrated a high degree of responsiveness to and cooperation with the inspectors in resolving a concern with the seismic qualification of the DB-50 breakers, paragraph 3.c.

The licensee has expended a substantial effort during the refueling outage to improve housekeeping. The improved CV conditions are especially noteworthy, paragraph 2.

REPORT DETAILS

1. Licensee Employees Contacted

- R. Barnett, Maintenance Supervisor, Electrical
- R. Chambers, Engineering Supervisor, Performance
- D. Crocker, Supervisor, Radiation Control
- J. Curley, Director, Regulatory Compliance
- C. Dietz, Manager, Robinson Nuclear Project Department
- R. Femal, Shift Foreman, Operations
- W. Flanagan, Manager, Design Engineering
- W. Gainey, Support Supervisor, Operations
- P. Harding, Project Specialist, Radiation Control
- E. Harris, Director, Onsite Nuclear Safety
- R. Johnson, Manager, Control and Administration
- D. Knight, Shift Foreman, Operations
- D. McCaskill, Shift Foreman, Operations
- R. Moore, Shift Foreman, Operations
- *R. Morgan, Plant General Manager
- M. Page, Acting Manager, Technical Support
- D. Quick, Manager, Maintenance
- *D. Sayre, Senior Specialist, Regulatory Compliance
- D. Seagle, Shift Foreman, Operations
- *J. Sheppard, Manager, Operations
- R. Steele, Operating Supervisor, Operations
- *H. Young, Director, Quality Assurance/Quality Control

Other licensee employees contacted included technicians, operators, mechanics, security force members, and office personnel.

NRC Resident Inspectors

- *L. Garner
- *K. Jury

*Attended exit interview on February 15, 1989.

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Operational Safety Verification (71707)

The inspectors observed licensee activities to confirm the facility was being operated safely and in conformance with regulatory requirements, and that the licensee's management control system was effectively discharging its responsibilities for continued safe operation. These activities were confirmed by direct observations, facility tours, interviews and discussions with licensee management and personnel, independent verifications of safety system status and limiting conditions for operation, and reviews of facility records.

Periodically, the inspectors reviewed shift logs, operations records, data sheets, instrument traces, and records of equipment malfunctions to verify operability of safety-related equipment and compliance with TS. Specific items reviewed include control room logs, auxiliary logs, operating orders, standing orders, and equipment tagout records. Through periodic observations of work in progress and discussions with operations staff members, the inspectors verified that the staff was knowledgeable of plant conditions; responding properly to alarm conditions; adhering to procedures and applicable administrative controls; aware of equipment out of service; and cognizant of surveillance testing and maintenance activities in progress. The inspectors observed shift changes to verify that continuity of system status was maintained and that proper control room staffing existed. The inspectors also observed that access to the control room was controlled and operations personnel were carrying out their assigned duties in an attentive and professional manner. The control room was observed to be free of unnecessary distractions.

On January 27, 1989, the inspectors observed independent verification activities required by OP-001, Reactor Control and Protection System, to place the reactor protection system in service. During the second operator check, it was discovered that circuit breaker no. 17 on instrument bus 3 was in the OFF position and had not been noted by the first operator as being in the OFF position. OP-001 requires all non-spared breakers to be turned ON or noted as being out of position if under clearance. This breaker was labeled as being a supply to the fixed incore neutron monitors and had no clearance tag on it. Subsequently, the inspectors were informed by the licensee that the breaker had been spared more than ten years earlier. The failure of the first operator to perform OP-001 correctly is considered to be a violation: Failure to Follow Procedure OP-001, LIV (261/89-03-01). This violation meets the criteria specified in Section V of the NRC Enforcement Policy for not issuing a Notice of Violation and is not cited.

The inspectors determined that the method used by the licensee to determine which breakers are spares is awkward and readily lends itself to human error. SD-16, Electrical Systems, is the document used by operations personnel to determine which breakers supply vital and safety-related instrumentation. SD-16 incorrectly describes circuit breaker 17 as being in-service even though it had previously been spared by a plant modification. The need was discussed with the Operations Manager to upgrade the methodology for verifying correct instrument bus breaker alignment to include human factor considerations and the concern over the accuracy of SD-16. The Operations Manager indicated that these items would be reviewed and a determination made on what actions, if any, will be taken.

On January 30, 1989, the inspectors conducted a general tour of the CV in anticipation of a restart from the 1988 refueling outage. The inspectors visually verified that safety-related equipment such as the containment fan coolers, PZR PORVs, accumulators, and major valves were operable

and/or aligned for service as required by plant conditions. The inspectors observed that the substantial effort during the outage to improve the overall site cleanliness and housekeeping had resulted in significant improvements inside the CV. Though additional future measures will be necessary to stay in line with evolving industry norms, the licensee has improved CV housekeeping from marginally adequate (as discussed in the most recent SALP report) to good, and in some areas outstanding. Minor conditions observed during the tour were reported to the licensee for correction as they deemed necessary.

The inspectors verified by general observation, perimeter walkdowns, and interviews that measures taken to assure the physical protection of the facility met current requirements. The performance of various security force shifts was observed to verify that daily activities were conducted in accordance with the requirements of the security plan. Activities inspected included: protected and vital areas, access controls, searching of personnel and packages, badge issuance and retrieval, patrols, escorting of visitors, and compensatory measures. In addition, the inspectors routinely observed protected and vital area lighting and barrier integrity.

One licensee identified violation was identified within the areas inspected.

3. Monthly Surveillance Observation (61726)

The inspectors observed certain surveillance activities of safety-related systems and components to ascertain that these activities were conducted in accordance with license requirements. For the surveillance test procedures listed below, the inspectors determined that precautions and LCOs were met, the tests were completed at the required frequency, the tests conformed to TS requirements, the required administrative approvals and tagouts were obtained prior to initiating the tests, the testing was accomplished by qualified personnel in accordance with an approved test procedure, and the required test instrumentation was properly calibrated. Specifically, the inspectors witnessed/reviewed portions of the following test activities:

a. EST-048 (revision 6), Control Rod Drop Test

The inspectors verified that the test was performed in accordance with the procedure.

b. EST-049 (revision 3), Rod Drive Mechanism Operation Testing

The inspectors witnessed performance of the test and verified that TS, prerequisites, and other limitations were complied with.

c. OST-162 (revision 12), Emergency Diesel Generator Auto Start On Loss of Power And Safety Injection - Emergency Diesel Trips Defeat

The inspectors witnessed and reviewed selected parts of the subject test on January 24 and 25, 1989. While verifying that the initial test configuration was in conformance with that specified in the OST, the inspectors noted that BIT inlet valves SI-867 A and B indicated OPEN on the RTGB, whereas steps 7.1.7.1. and 7.1.7.2 of the the OST had been initialed that they were in the CLOSED position. This discrepancy was discussed with the test coordinator and the valves were positioned in accordance with the OST. The partial performance of the restoration section of OST-163, Safety Injection Test, and the initial lineup for OST-162 had not been coordinated properly. This allowed performance of OST-163 to position the valves in a different position than required by OST-162. This failure to control the evolutions properly is considered to be indicative of a weakness in procedure utilization. This was discussed with the Operations Manager and during the exit on February 15, 1989. The failure to establish the proper test configuration in accordance with OST-162 is considered a violation: Restoration Lineup of OST-163 Results in BIT Inlet Valves Being in a Position Other Than That Established For Performance of OST-162 (261/89-03-02).

During performance of OST-162, the A battery charger tripped on undervoltage as designed and had to be manually restarted. The inspectors observed two unsuccessful attempts to restart the battery charger. On the first attempt, the supply breaker to the battery charger tripped and the battery charger failed to restart. On the second attempt, a red ON lamp illuminated. Upon indication of a restart (i.e., the red light) the operator immediately exited the area to continue to perform other steps of OST-162. Inspection of the battery charger revealed that the output ammeter was pegged downscale. Furthermore, the A DC bus ammeter indicated that the battery was still carrying the DC bus and the bus voltage was observed to be 122 volts (i.e., the battery terminal voltage). The bus voltage is normally 130 volts or more if the battery charger is functioning correctly. These abnormal indications were reported to the operator. The battery charger was secured and the backup battery charger A-1 was placed in service. Subsequent review by the licensee revealed that the operator had attempted to re-energize the battery charger with its output breaker closed. The voltage regulating circuit was unable to function correctly under these conditions. Subsequent inspection and testing indicated that operation in a malfunctioning state for approximately five minutes had not damaged the battery charger. The licensee also identified that a procedure revision to OP-601, DC Supply System, issued and effective on January 24, 1989, provided a section with instructions requiring opening of the output breaker prior to re-starting the battery charger. This section was not previously in the procedure. Failure to follow OP-601 is considered a violation: Failure To Follow Procedure OP-601, LIV (261/89-03-03). This violation meets the criteria specified in Section V of the NRC Enforcement Policy for not issuing a Notice of Violation and is not cited.

Of greater significance, was that the operator failed to observe the abnormal battery charger ammeter indication, and walked past the DC bus voltmeter and ammeter without looking at them. As described by the operator, he was in a hurry to complete subsequent steps of the OST. Since the operator had experienced trouble restarting the battery charger, reliance on a singular indication without taking the time to observe readily available redundant indication is considered poor operator performance. This was discussed with the Operations Manager and with plant management during the exit on February 15, 1989.

During the first SI signal simulation of OST-162, both the C SIP and HVH-3 CV Fan Cooler failed to start. The inspectors had observed that the HVH-3 breaker had closed, but instantaneously tripped open. Two attempts to manually initiate the C SIP from the RTGB also had similar results. Subsequent SI signals resulted in the breakers successfully closing even though no work had been performed on them. This was discussed with operations personnel. It was explained that this is a frequent occurrence after a DB-50 breaker has been racked out. Sometimes, the breaker is slightly misaligned when it is racked back in. A closing/tripping action will sometimes reposition the breaker sufficiently such that it becomes correctly aligned without having to rack it out and back in again. Because of this phenomenon, it has been the operations department's practice to cycle DB-50 breakers twice upon returning them to service. However, this testing sequence did not require it. The licensee is considering adding appropriate steps to test procedures such as OST-162 to cycle the breakers prior to the OST performance. The inspectors verified that for the SIPs and the CV spray pumps, GP-002 revision 36, Cold Solid to Hot Subcritical at No Load TAVG, contains steps to start these pumps after the pump breakers have been racked in.

The inspectors were concerned that if vibration could align the breakers, perhaps vibration could unalign them, especially during a seismic event. The licensee examined the subject compartments for proper dimensions and clearance. Only normal wear was observed. The licensee was able to duplicate the condition and determined that once the alignment corrected itself the breaker would remain in that configuration. On January 30, 1989, the licensee demonstrated for the inspectors that when racking the breaker in, it might appear to be fully in, but the trip tab on the cabinet can still be in contact with the trip bar. This contact supplies enough pressure on the trip bar to cause the breaker to immediately trip when an attempt is made to close it. When the breaker vibrates due to a close/trip pumping action, it falls fully down into an engagement slot. In that condition, the vendor stated clearance exists between the cabinet trip tab and the breaker trip bar. The inspectors concurred with the licensee's determination that once properly aligned a breaker would remain properly aligned.

During the performance of OST-162 step 7.3.28, the operator is required to manually close B SIP breaker 52/29C. The licensed operator performing the test contacted the control room to have someone explain how to accomplish this task. Another licensed operator came and demonstrated how to manually close this particular style of breaker. The inspectors discussed with the Operations Manager that this may indicate a need to supply refresher training to licensed operators on certain auxiliary operator tasks which they may not have performed in several years.

Because the above OST-162 performance was unsuccessful, appropriate portions were re-performed on January 25, 1989. The inspectors reviewed the completed test packages and verified that the acceptance criteria were met.

d. OST-163 (revision 9) Safety Injection Test

The inspectors witnessed successful completion of the test from the control room. The inspectors verified the equipment responded as expected to a simulated SI signal.

One violation and one LIV was identified within the areas inspected.

4. Monthly Maintenance Observation (62703)

The inspectors observed several maintenance activities of safety-related systems and components to ascertain that these activities were conducted in accordance with approved procedures, TS, and appropriate industry codes and standards. The inspectors determined that these activities were not violating LCOs and that redundant components were operable when applicable. The inspectors also determined that: activities were accomplished by qualified personnel using approved procedures; required administrative approvals and tagouts were obtained prior to work initiation; appropriate ignition and fire prevention controls were implemented; and the effected equipment was properly tested before being returned to service. In particular, the inspectors observed/ reviewed the following maintenance activities:

- WR/JO 89-ABQS1 - Repair purge inlet outboard isolation valve seal
- WR/JO 89-ABLW1 - Repair A EDG cooling water high temperature trip circuit

No violations or deviations were identified within the areas inspected.

5. ESF System Walkdown (71710)

On February 10, 1989, the inspectors performed a partial walkdown of the AFW system. In particular, the inspectors examined portions of the SDAFW discharge line and steam line. The inspectors discovered valve V2-14B's motor operating when the valve was closed. Valve V2-14B is the SDAFW

injection valve to B S/G. The condition was reported to the control room and the valve was cycled successfully opened and closed. Subsequent to this report period, the licensee determined that the problem was an isolated event. Disassembly of the actuator revealed that during the last overhaul in 1986, the fork assembly associated with the declutching mechanism had been installed backwards. This allowed the drive dogs to only partially engage. Due to wear on the dogs and partial engagement, the drive assembly had degraded to the point that the dogs would not consistently engage when being driven in the close direction. The licensee verified that the overhaul procedure in 1986, CM-113, SMB-000, SMB-00 and SB-00 Motor Operator Overhaul, revision 0, contained specific directions and a diagram addressing the proper orientation during reassembly. The licensee inspected V2-14A and C, as well as two other valves overhauled in 1986. These four valves had been overhauled under the same supervision as V2-14B. No other problems were discovered. The inspectors concur that the V2-14B misassembly was most likely an isolated error.

No violations or deviations were identified within the areas inspected.

6. Onsite Review Committee (40700)

The inspectors evaluated certain activities of the PNSC to determine whether the onsite review functions were conducted in accordance with TS and other regulatory requirements. In particular, the inspectors attended the refueling outage pre-startup PNSC on January 27, 1989. During this meeting existing JCOs were reviewed for continual applicability, and two new JCOs were approved. It was ascertained that provisions of the TS dealing with membership, review process, and qualifications were satisfied. The inspectors also followed up on selected previously identified PNSC activities to independently confirm that corrective actions were progressing satisfactorily.

No violations or deviations were identified within the areas inspected.

7. Licensee Action on Previously Identified Inspection Items (92701)

(Open) URI 88-24-05, Service Water Flow Analysis To Show Adequacy of Flows to Safety-Related Components

Inspection Report 261/88-38 addressed measured SW flows to certain components being less than recommended by the vendor and/or per design. The licensee's resolution of these discrepancies is as follows:

Components

A and B EDG Hx (maximum 8% low flow)

Resolution

EE-89-019 calculation demonstrated that reduced heat transfer due to less SW flow was bound by 10% Hx tube plugging allowed by the vendor.

Components
(cont'd)

Resolution

HVH 1-4 motor cooler
(maximum 20% low flow)

Analysis documented in DCN 858-22 shows coolers remain operable for up to 24% reduced flow. EST-102 is being written to perform quarterly surveillance on flow rates.

SDAFW pump lube oil cooler
(33% low flow)

Cooler cleaned to remove fouling. AO required once per shift to flush system.

A and B MDAFW pump lube
oil cooler (maximum 100%
low flow)

Coolers cleaned. AO required once per shift to flush system. Values still 16% below UFSAR values. SP-808 demonstrated lube oil temperature limit specified by vendor (140 degrees F) is not exceeded with reduced flow.

The inspectors reviewed EE-89-019 and EE-89-022 which evaluates the results of the flow test conducted per SP-814. The inspectors agree that the above described items have been satisfactorily addressed.

No violations or deviations were identified within the areas inspected.

8. Exit Interview (30703)

The inspection scope and findings were summarized on February 15, 1989, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection findings listed below and those addressed in the report summary. Dissenting comments were not received from the licensee. Proprietary information is not contained in this report. No written material was given to the licensee by the Resident Inspectors during this report period.

<u>Item Number</u>	<u>Status</u>	<u>Description/Reference Paragraph</u>
88-24-05	Open	URI - Service Water Flow Analysis to Show Adequacy of Flows to Safety-Related Components (paragraph 9)
89-03-01	Closed	LIV - Failure To Follow Procedure OP-001 (paragraph 2)
89-03-02	Open	VIO - Restoration Lineup of OST-163 Results in BIT Inlet Valves Being in a Position Other Than That Established For OST-162 (paragraph 3.c)

<u>Item Number</u> (cont'd)	<u>Status</u>	<u>Description/Reference Paragraph</u>
89-03-03	Closed	LIV - Failure to Follow Procedure OP-601 (paragraph 3.c)

9. List of Abbreviations

AFW	Auxiliary Feedwater
AO	Auxiliary Operator
BIT	Boron Injection Tank
CFR	Code of Federal Regulation
CM	Corrective Maintenance
CV	Containment Vessel
DC	Direct Current
DCN	Design Change Notice
EDG	Emergency Diesel Generator
EE	Engineering Evaluation
ESF	Engineered Safety Feature
EST	Engineering Surveillance Test
GP	General Procedure
Hx	Heat exchanger
HVH	Heating Ventilation Handling
JCO	Justification For Continued Operation
LCO	Limiting Condition for Operation
LIV	Licensee Identified Violation
MDAFW	Motor Driven Auxiliary Feedwater
NRC	Nuclear Regulatory Commission
OP	Operating Procedure
OST	Operations Surveillance Test
PNSC	Plant Nuclear Safety Committee
PORV	Power Operated Relief Valve
PZR	Pressurizer
QC	Quality Control
RTGB	Reactor Turbine Generator Board
SALP	Systematic Assessment of Licensee Performance
SD	System Description
SDAFW	System Driven Auxiliary Feedwater
SI	Safety Injection
SIP	Safety Injection Pump
SP	Special Procedure
SW	Service Water
TAVG	Temperature, Average
TS	Technical Specification
URI	Unresolved Item*
VIO	Violation
WR/JO	Work Request/Job Order

*Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations.