



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

JUL 16 1982

Report Nos. 50-324/82-02 and 50-325/82-02

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

Facility Name: Brunswick

Docket Nos. 50-324 and 50-325

License Nos. DPR-62 and DPR-71

Inspection at Brunswick site near Southport, North Carolina

Inspectors: C. N. Burger, for
 L. Garner, Resident Inspector

5/13/82
 Date Signed

C. N. Burger, for
 C. Julian, Project Inspector

5/13/82
 Date Signed

Approved by: C. N. Burger
 C. Burger, Section Chief, Division of Project
 and Resident Programs

5/13/82
 Date Signed

SUMMARY

Inspection on January 6-7, 1982

Areas Inspected

This special announced inspection involved 21 inspector-hours on site in the areas of review of the circumstances of the instance of exceeding a Technical Specification Limiting Condition for Operation as reported on December 31, 1981.

Results

In the area inspected, one violation was found (Exceeding a limiting condition of operation - paragraph 5.e).

DETAILS

1. Persons Contacted

Licensee Employees

C. R. Dietz, Plant General Manager
R. Morgan, Plant Operations Manager
*W. Tucker, Technical and Administrative Manager
R. Knobel, Assistant Operations Manager
R. Poulk, Regulatory Specialist

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

*Attended exit interview of January 7, 1982

2. Exit Interview

The inspection scope and findings were summarized on January 7, 1982 with those persons indicated in paragraph 1 above. The results of this inspection were further discussed on January 12, 1982, in a telephone conversation between C. Dietz, General Manager, Brunswick and C. Julian, Project Inspector, Region II. NRC concerns about the event involving the failed instrument without appropriate action was discussed by R. C. Lewis with Mr. Ben Furr, Vice President, Nuclear Operations, on January 19, 1982.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Followup on Licensee Event Report - Inoperable Reactor Vessel Low Water Level Instrument

a. Notification to NRC

On 12/31/81, the licensee informed the Region II office by telephone of an immediately reportable event. The licensee stated that actions required by technical specifications had not been taken on 12/28/81 when a reactor vessel low water level instrument had been found inoperable. The licensee further stated that upon determining the safety significance on 12/31/81 of the inoperable instrument, the shift foreman had accomplished the actions required by technical specifications.

On 1/6/82, the licensee recontacted the Region II office and stated that the actions taken by the shift foreman had not been adequate to satisfy all applicable technical specifications.

b. Description of Instruments and Technical Specification Requirements

Four differential pressure transmitters identified as B21-LT-N017A-1, B-1, C-1, and D-1, measure reactor vessel water level and provide signals to level indicators and trip units. The trip units are calibrated to actuate on a decreasing level and provide the first low level signals to the Reactor Protection System (RPS) and the Primary Containment Isolation System (PCIS).

Technical Specification (TS) 3.3.1 requires that in Operational Conditions 1 and 2 there be two operable low water level channels per RPS trip channel; that is, all four level signals (A-1, B-1, C-1 and D-1) must be operable. If one of the signals is inoperable, TS 3.3.1.a requires that the inoperable channel be placed in the tripped state within one hour. This action causes a channel trip of the affected RPS channel (half-scam) and a low level signal from either of the two switches in the unaffected RPS channel will result in a reactor scram. Placing the inoperable channel in the tripped state results in a more conservative logic, while failure to do so results in a less conservative actuation logic than required by technical specifications.

Technical Specification 3.3.2 requires that in Operational Conditions 1, 2 and 3 there be two operable low water level channels per PCIS channel. If one of the signals is inoperable, TS 3.3.2.b requires that the inoperable level channel be placed in the tripped state within one hour. This action causes a half-isolation by tripping the affected isolation actuation channel.

Both TS 3.3.1.a and 3.3.2.b can be satisfied simultaneously by placing the inoperable water level channel A-1, B-1, C-1 or D-1 in the tripped state since that channel feeds trip inputs into both the RPS and PCIS. The desired action, a half-scam and a half-isolation, can also be accomplished by tripping the affected RPS channel within the RPS system and tripping the affected PCIS channel within PCIS system; however, this requires two independent actions to satisfy TS 3.3.1.a and 3.3.2.b.

c. Chronology of Event

An NRC inspection was conducted to determine the circumstances surrounding the inoperability of reactor vessel low water level instrument 1-B21-LT-N017D-1 (referred to hereafter as D-1) for Unit 1 and the actions taken by licensee personnel in response to the instrument failure. Based on document reviews and discussions with licensee personnel, the following chronology was developed.

On 12/26/81, an Auxiliary Operator (AO) observed that reactor vessel water level instrument D-1 for Unit 1 was reading greater than 210 (i.e., full scale). He recorded the reading on a form entitled "Auxiliary Operators Daily Surveillance Requirements (DSR) Tech. Spec. Items". He apparently took no further action. Three shift foremen subsequently initialed the DSR on that day.

Note: The DSR is a multipaged checklist covering many instruments and used for seven consecutive days. It provides a record of instrument readings observed by the AO and the results of certain specified tests. The shift foreman on each shift is required to certify his review by initialing the form. The particular instrument under discussion, reactor vessel water level, is read and logged once per day.

On 12/27/81, an identical entry of "'210" was also recorded. The AO apparently failed to bring the matter to the attention of other operations personnel or to initiate action to repair the instrument. Three shift foremen subsequently initialed the DSR.

On 12/28/81, a reading of "'210" was again recorded on the DSR. At this time, the AO on duty recognized the reading as abnormal and initiated a "trouble ticket" to get the instrument checked by maintenance personnel. On the reverse side of the DSR, he entered a note to the effect that the instrument had failed high. A tag was subsequently placed on the instrument to indicate its inoperable status. The shift foreman, a licensed Senior Reactor Operator, reviewed the trouble ticket and checked a block on the ticket indicating that the failed instrument was not required by Technical Specification. However, he also initialed the DSR, which identified the instrument as one required by Technical Specifications. The two other shift foremen on duty that day also initialed the DSR which now clearly identified the instrument as inoperable.

On 12/29/81, a reading of "'210" was again recorded by the AO. Three shift foremen again initialed the DSR, but took no further action.

On 12/30/81, a reading of "'210" was again recorded by the AO. Three shift foremen again initialed the DSR and took no further action.

On 12/31/81, at 8:15 a.m., during a discussion between I&C maintenance personnel and operations personnel it was recognized that instrument D-1 was required by Technical Specifications. After consulting Technical Specification 3.3.1.a, a half-scrum was manually initiated by tripping Reactor Protection System (RPS) Channel B within the hour. The failed instrument was returned to service at 1:30 p.m. The violation of technical specifications was reported by telephone to NRC Region II.

On 1/4/82, the resident inspector informed licensee representatives that, in addition to TS 3.3.1 which requires instrument D-1 to be operable to initiate a reactor scram, TS 3.3.2 requires the instrument to be operable to initiate a primary containment isolation for valve groups 2, 6, 7, and 8. Valve groups 2, 6, 7, and 8 isolate the drywell floor and equipment drain discharge and transversing in-core probe system, the drywell and suppression pool atmosphere control systems, the reactor vessel head spray, and the residual heat removal system.

On 1/6/82, the licensee reported to the Director, Region II that he had on that date determined that his failure to satisfy the Action Statement of Technical Specification 3.3.2a following the 12/28/81 failure of instrument D-1 was an immediately reportable event.

On 1/8/82, the cause of the instrument failures was identified by maintenance personnel.

d. Repair of Instrument D-1

The inoperability of the instrument resulted from a draining of its reference leg which it shared with differential pressure transmitter N017D-2. The latter instrument also experienced off-scale-high failure but it was not required by Technical Specification to be operable.

The draining of the reference leg was initially attributed to a not-fully-closed equalizing valve. However, subsequent reference leg drainage, after the valve was replaced, caused the licensee to seek another cause for the malfunction. On 1/8/82 a bypass valve around the excess flow check valve on the reference leg line was found to have a small packing leak. When the packing was tightened, the reference leg refilled and drainage ceased.

e. Evaluation of the Event

As a result of certain inadequacies in the licensee program, Unit 1 was operated between December 26 and 31, 1981 in a condition exceeding Limiting Conditions for Operation without having satisfied the Action Statements specified in Technical Specifications 3.3.1 and 3.3.2 in that instrument D-1 was inoperable and its level channel was untripped. This was a violation (50-325/82-02-01) applicable to Unit 1.

Had certain conditions existed this violation may have been prevented. These conditions are as follows:

- (1) Had the involved personnel (AOs and Shift Foremen) been adequately trained in operational limitations as required by Technical Specification 6.4.1 or had they paid sufficient attention to detail in accomplishing their assigned duties they would have:
 - (a) recognized that "210" was an abnormal reading for Instrument D-1 indicating a malfunction;

- (b) determined that its operability was governed by LCO, as were all instruments identified in the attachment entitled "Auxiliary Operators Daily Surveillance Requirements (DSR) Tech. Spec. Items";
- (c) performed a channel check (i.e., comparison of an instrument reading with other independent instruments measuring the same variable) of these instrumentation channels as required by Technical Specifications 4.3.1.1 and 4.3.2.1 to demonstrate operability; and/or
- (d) determined that both TS 3.3.1 and 3.3.2 were applicable to the instrument which malfunctioned.

The actions of the Shift Foreman who approved the trouble ticket are of particular concern because the licensee informed the NRC on November 2, 1981 that all SROs would be counseled concerning the necessity of promptly screening trouble tickets to identify those items requiring immediate attention. This additional and specific training should have alerted the Shift Foreman to determine the status of instrument D-1 with respect to Technical Specification requirements.

- (2) Had the procedure provided to the AOs and Shift Foremen (OI-3, "Periodic Testing and Daily Surveillance Reports") been more explicit, as required by paragraph 5.3.1 of ANSI N18.7-1976, the event might have been prevented. It should have identified Instrument D-1 as one requiring a channel check in accordance with Technical Specifications 4.3.1.1 and 4.3.2.1. It should have provided acceptance criteria for determining operability of all instruments covered by the procedure. It should have provided explicit instructions regarding action to be taken in the event that an acceptance criterion was exceeded (even though such instructions may have been provided elsewhere). In retrospect, it appears that a conspicuous notice in the the DSR to the effect that malfunction of any instrument identified in the checklist warrants immediate evaluation would have been appropriate.