

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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HINNANT,C.S. Carolina Power & Light Co.  
RECIP.NAME RECIPIENT AFFILIATION  
Document Control Branch (Document Control Desk)

SUBJECT: Provides response to violation noted in insp rept  
50-261/95-30.SI accumulator C declared inoperable & LT-928  
replace,calibr & returned to svc on 951129.LT-930 also  
calibr & returned to svc & accumulator C declared operable.

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FEB 21 1996

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Robinson File No.: 13510E  
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United States Nuclear Regulatory Commission  
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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2  
DOCKET NO. 50-261/LICENSE NO. DPR-23  
NRC INSPECTION REPORT NO. 50-261/95-30  
REPLY TO A NOTICE OF VIOLATION

Gentlemen:

This provides the Carolina Power & Light (CP&L) Company reply to the Notice of Violation identified in NRC Inspection Report No. 50-261/95-30 for the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, which was transmitted by NRC letter dated January 26, 1995. The Violation involves an inadequate Safety Injection accumulator level calibration procedure. As requested in the letter transmitting the Notice of Violation, the enclosure restates the violation, followed by our reply. This reply is required to be submitted to the NRC by February 25, 1996.

Should you have any questions regarding this matter, please contact Mr. R. M. Krich at (803) 857-1802.

Very truly yours,

C. S. Hinnant  
Vice President

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Enclosure

c: Mr. S. D. Ebnetter, Regional Administrator, USNRC, Region II  
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## REPLY TO A NOTICE OF VIOLATION

### Violation

Technical Specification 6.5.1.1, Procedures, Tests, and Experiments, requires in part, that written procedures be established, implemented, and maintained, covering the activities recommended in Appendix A of Regulatory Guide 1.33, Rev. 2, 1978, including procedures for calibrating safety-related equipment. Implicit in this requirement, is the requisite that the procedures be adequate for the circumstances.

Process Instrument Calibration Procedure, PIC-012, Accumulator Level Transmitters, was developed to calibrate the level transmitters associated with the Safety Injection Accumulators.

Contrary to the above, PIC-012 was inadequate, in that, it did not provide adequate instructions for ensuring that the Accumulator Level Transmitters were properly calibrated. Between June 14 and June 17, 1995, the B and C Accumulator Level Transmitters (LT-924, LT-926, LT-928, and LT-930) were mis-calibrated resulting in an operation with indication approximately 6-7 percent below the actual level.

### Reply

Carolina Power & Light (CP&L) agrees that the violation occurred as described.

#### 1. The Reason for the Violation

This condition was caused by failure to satisfy the explicit Technical Specification (TS) requirement to establish and implement procedures that adequately cover the proper calibration of the Safety Injection (SI) accumulator Level Transmitters (LTs). Maintenance procedures allowed offsetting transmitter output after calibration, without placing limitations on the amount of offset allowed. These procedures, combined with an Instrumentation and Control (I&C) Supervisor's lack of familiarity with this particular application, and inadequacies in the configuration of the transmitter piping and tubing, led to the mis-calibration of the LTs. Our review also identified that previous corrective actions taken to address sensing line configuration problems associated with the SI accumulator LTs, as well as other safety-related instrumentation, have not been fully effective in that the corrective actions were too narrowly focused.

The originally installed instrumentation for measuring SI accumulator level was replaced early in plant life to address a reliability issue. This replacement changed the type of transmitters used, and resulted in a slight variation (i.e., less than 1/4 inch) between the actual installation elevations of the two transmitters for each of the three accumulators (i.e., the "A", "B", and "C" accumulators). This elevation variation had an adverse impact for plant operators in that it had the effect of narrowing the allowed accumulator level indication operating band. In order to eliminate the indicated differences caused by this slight variation in the elevation of the transmitters, the practice of offsetting one of the two transmitters on each accumulator to agree with the other, after the transmitters were calibrated and returned to service, was established. The transmitter that was left as calibrated was identified as the "master," and the transmitter that was offset was identified as the "slave."

The transmitters are installed in a configuration where the vents are at the bottom of the transmitter. The configuration of the sensing lines increases the difficulty to remove any gases that may be trapped in the sensing lines that are filled with liquid. The sensing line (i.e., 3/8 inch tubing), in effect, starts at the center of a horizontal run of two-inch diameter pipe that comes from the bottom of each accumulator. This configuration results in the potential for gases becoming entrapped above the 3/8 inch tubing connection in the two-inch pipe. The tubing then bends downward to the transmitter, and enters the transmitter at the top, with a vent at the bottom. The vent consists of a petcock that is opened to allow the fluid to drain out. When it is determined that all the gases have been purged, the petcock is closed. There are no visible means to verify the presence, or absence, of trapped gases. The changes in diameter from the two-inch line to the 3/8 inch tubing, to the swagelok fittings, to the transmitter, to the petcock, provide many locations for gases to accumulate and be protected from entering the small purging flow of fluid.

The transmitters are routinely calibrated during plant start-up from refueling outages. During the calibration process, the transmitters are "purged" to remove any gas from the liquid filled (i.e., "wet") sensing lines and moisture from the dry sensing lines, and are adjusted to compensate for the differences in elevation. The "purge" is considered complete when there is no indication of gas in the wet lines and no moisture in the dry lines. However, since the piping/tubing configuration creates difficulty in performing an effective purge of the lines, excessively long periods of purging have been previously required to achieve acceptable results.

Postulating that the presence of gas in the wet sensing line caused a reduction in the output voltage of the affected transmitter, the following chronology of events is provided. Plant personnel were not aware of the possibility that gas may remain in the sensing lines during these evolutions.

On June 3, 1995, a six percent variance between the two indications of "C" accumulator level was noted, and transmitters LT-928 and LT-930 were vented to correct this variance. Transmitter LT-930 was selected as the "slave" and a positive voltage adjustment was made to match the LT-928 transmitter indication. The work instructions did not direct the technicians to make this voltage adjustment, and the technicians did not complete the "Master/Slave Form" in procedure Process Instrument Calibration (PIC)-012, "Accumulator Level Transmitters," when they made the voltage adjustment. In addition to not completing the "Master/Slave Form," the technicians did not document the magnitude of the offset required to achieve parity of the "master/slave" transmitters.

Between June 3, 1995, and June 14, 1995, a gas bubble apparently purged itself from the "C" accumulator, LT-930 loop, causing LT-930 to read higher than LT-928. Based on this change in indication, on June 14, 1995, the transmitters for this accumulator were again vented. After considerable time was spent purging the sensing lines, the technicians recognized that a large offset would be needed to achieve identical outputs from the transmitters. The technicians were unaware that there had been previous work on these transmitters on June 3, 1995, when transmitter LT-930 was designated as the "slave" to transmitter LT-928. Earlier, during adjustments on a transmitter in an unrelated system, the technicians had been sufficiently concerned about the magnitude of an offset, and stopped work to confer with the I&C Supervisor on the proper action to take. In this earlier case, the use of a large offset had been deemed acceptable. Therefore, with the established precedent for using a large offset to achieve identical outputs, LT-928 was made the "slave" transmitter and the zero was adjusted upwards to match that of transmitter LT-930. This resulted in both transmitters for the "C" accumulator indicating a higher level than actual.

Licensee Event Report (LER) 95-009 was submitted to the NRC on December 28, 1995. This LER reported that at a time between October 28, 1995 and November 3, 1995, both of the LTs for the "C" SI accumulator had been offset upscale to the extent that the actual level dropped to a point that was less than the amount required by TS. During subsequent investigation of this condition, we identified an error in the accumulator channel scaling calculation involving failure to compensate for the weight of the pressurized nitrogen maintained in the accumulators on the low pressure side of the accumulator transmitters. As a result of this error, the transmitters would indicate a lower than actual level. On February 1, 1996, we submitted a revision to this LER to report that instead of exceeding the low water volume limit, the high water volume TS limit had been exceeded. As discussed in the LER, the high accumulator water level condition did not have any safety consequences.

2. The Corrective Steps That Have Been Taken and the Results Achieved

On November 29, 1995, the "C" SI accumulator was declared inoperable and LT-928 was replaced, calibrated, and returned to service. LT-930 was then calibrated and returned to service, and the "C" accumulator was declared operable.

Procedure PIC-012 has been revised to remove the instructions for establishing the "master/slave" transmitter relationship.

3. The Corrective Steps That Will Be Taken to Avoid Further Violations

A review of the tubing/piping configuration of the accumulator transmitters was completed during January 1996 to determine if improvements can be made for purging entrapped gases. As a result of this review, procedure PIC-012 was revised and effective on January 22, 1996, to establish a new technique for filling the transmitters. This technique will eliminate the potential of air pockets remaining in the transmitter and tubing.

A review of other transmitter configurations that could exhibit erroneous indication due to air entrapment will be completed during February 1996, with the emphasis on level transmitters since previous corrective actions focused on flow transmitters. Any configuration identified with the potential of air entrapment will be corrected as necessary.

Training for I&C personnel on the effects of erroneous transmitter readings, removing and returning transmitters to service, and the effects of the process on indicated readings, will be conducted starting the first calendar quarter of 1996.

4. The Date When Full Compliance Will Be Achieved

Full compliance was achieved with the revision to procedure PIC-012, on December 18, 1995.