

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 FACIL: 50-261 H. B. Robinson Plant, Unit 2, Carolina Power and Light 05000261  
 AUTH. NAME AUTHOR AFFILIATION  
 CUTTER, A. B. Carolina Power & Light Co.  
 RECIP. NAME RECIPIENT AFFILIATION  
 VARGA, S. A. Operating Reactors Branch 1

SUBJECT: Forwards status rept on inadequate core cooling & reactor vessel level indication sys, in response to 841231 SER.  
 Summary of deviations of as-built reactor vessel level indication sys also encl.

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 TITLE: OR Submittal: Inadequate Core Cooling (Item II.F.2) GL 82-28

## NOTES:

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Carolina Power & Light Company

MAY 20 1985

SERIAL: NLS-85-173

Director of Nuclear Reactor Regulation  
Attention: Mr. Steven A. Varga, Chief  
Operating Reactors Branch No. 1  
Division of Licensing  
United States Nuclear Regulatory Commission  
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2  
DOCKET NO. 50-261/LICENSE NO. DPR-23  
INADEQUATE CORE COOLING INSTRUMENTATION  
SYSTEM IMPLEMENTATION LETTER

Dear Mr. Varga:

#### SUMMARY

Your letter dated December 31, 1984 transmitted a Safety Evaluation Report and request for additional information regarding the H. B. Robinson Steam Electric Plant Unit 2 Inadequate Core Cooling Instrumentation System. Carolina Power & Light Company's response dated February 1, 1985 committed to provide an implementation letter by May 20, 1985. Further information regarding the calibration status of our Reactor Vessel Level Indication System (RVLIS) was provided in our letter dated April 15, 1985.

#### DISCUSSION

Our April 15, 1985 letter detailed problems which we encountered while attempting to calibrate our RVLIS. The necessary design changes, procurement, qualification of materials, field support and check-out to support the calibration are planned for completion by September 30, 1985. This situation has impacted our implementation schedule; the status of each required item for the implementation letter is addressed in Enclosure 1. A supplemental implementation letter will be submitted by October 31, 1985 to discuss the current status of the system and to provide additional implementation items if available.

If you have any questions regarding this matter, please contact Jan Kozyra at (919) 836-7924.

Yours very truly,

A. B. Cutter - Vice President  
Nuclear Engineering & Licensing

ABC/JSK/ccc (1509JSK)  
Enclosures

cc: Dr. J. Nelson Grace (NRC-RII)  
Mr. G. Requa (NRC)  
Mr. H. Krug (NRC Resident Inspector - RNP)

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PDR ADOCK 05000261  
P PDR

411 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

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ENCLOSURE 1

STATUS OF IMPLEMENTATION LETTER ITEMS

ITEM (1)

Notification that the system installation, functional testing, and calibration is complete and test results are available for inspection.

RESPONSE

Calibration is not complete; this situation was discussed in CP&L's letter dated April 15, 1985. This item will be addressed in our supplemental letter.

ITEM (2)

Summary of licensee conclusions based on test results, e.g.:

- (a) the system performs in accordance with design expectations and within design error tolerances; or
- (b) description of deviations from design performance specifications and basis for concluding that the deviations are acceptable.

RESPONSE

Testing has not been completed due to the situation discussed in our April 15, 1985 letter. This item will be addressed in our supplemental letter.

ITEM (3)

Description of any deviations of the as-built system from previous design descriptions with any appropriate explanation.

RESPONSE

A description of deviations of the as-built system from previous design descriptions is in Enclosure 2.

ITEM (4)

Request for modification of Technical Specifications to include all ICC instrumentation for accident monitoring.

RESPONSE

Technical Specifications are not proposed at this time since the system is not considered functional. Technical Specifications will be addressed in our supplemental letter.

ITEM (5)

Request for NRC approval of the plant-specific installation.

RESPONSE

NRC approval is not requested at this time since the system is not considered functional.

ITEM (6)

Confirm that the EOPs used for operator training will conform to the technical content of NRC approved EOP guidelines (generic or plant specific).

RESPONSE

The Procedures Generation Package for the Emergency Operating Procedures was submitted by our letter dated July 2, 1984. The HBR2 specific technical guidelines are based on the Westinghouse Owners' Group generic technical guidelines. Per our February 1, 1985 submittal, operating and emergency procedure implementation is contingent upon NRC approval of the plant-specific RVLIS installation. Therefore, procedure implementation remains scheduled for 90 days after NRC approval.

ENCLOSURE 2

SUMMARY OF DEVIATIONS OF AS-BUILT RVLIS  
FROM DESCRIPTION SUBMITTED ON MARCH 31, 1981

## DEVIATION SUMMARY

### 1. BOTTOM MOUNTED INCORE INSTRUMENTATION CONDUIT RTD LOCATION (FCN CPLO-40511)

The original design of the RVLIS specifies 2 RTDs per train located on the incore instrumentation conduit. One per train is to be located on the vertical portion between the bottom of the vessel and the U-bend to the seal table elevation. With this arrangement the 7300 process equipment would average the associated densities rather than determining the differences in density. The averaging of the density would result in erroneous level indications if the RTD temperatures are different. Based on a review of the reactor vessel cavity and tunnel configuration, Westinghouse has confirmed that the region can be considered an isothermal compartment. Therefore, there is no need for two RTDs per train. Only one RTD is required per train, and it should be located at the mid-point of the vertical section between the elevation of the bottom of the vessel and the seal table. (For train separation the RTDs are separated by 18 inches.) Revisions to the 7300 process equipment have been made to accommodate the use of a single RTD per train.

### 2. ANALOG INDICATOR AND RECORDER SCALE CHANGES (FCN-CPLO-4056 AND 4057)

During the Westinghouse Final Design Review of the RVLIS, it was determined that in many plants the normal RVLIS level indications could be at or above the original 110 percent span (e.g., full power operation). In this event, it would not be possible to differentiate between a normal indication and an instrument failure. To alleviate this situation, the upper limits on the indicator scales were increased to 120 percent to assure all normal indications would be on scale. For the hot leg tap, the lower end of the upper range level scale was revised from 60 percent to 68 percent, the actual (plant specific) percentage of the vessel height at the hot leg tap. This change was made to avoid any operator confusion between the full range and upper range level readings.

### 3. HOT LEG INSTRUMENT TAP

The original design of the RVLIS specified making the penetrations for connecting the hot leg taps into the side of two RCS hot leg pipes. Subsequently, Westinghouse has recommended that for existing plants, the tap connection be made at the RTD Bypass Manifold. This has been done at H. B. Robinson.

### 4. RVLIS DISPLAYS

To minimize the potential for error and provide more meaningful information to the operator, the descriptions of the displays were changed per Westinghouse recommendations as follows:

#### Previous Description

Upper Range  
Narrow Range  
Wide Range

#### New Description

(same)  
Full Range  
Dynamic Head

## 5. HOT LEG WIDE RANGE TEMPERATURE

The original design specified that these signals would be derived from existing channels in the Control Section of the Control & Protection Instrumentation System. In reviewing these instrument loops, it was determined that they were not safety grade circuits. As a result, these instrument loops were moved to the RVLIS cabinet and upgraded to safety grade. Outputs from two of these signals also interface with the core cooling monitor through electrical isolators.

## 6. LEVEL RECORDING (FCN-CPLO-40513)

The original design specified that the level signals on one of the two trains were available for trending on a chart recorder. To enhance the reliability of the information presented by RVLIS to the operator, the design was changed to allow either train of RVLIS to be selected for trending by the operator through a selector switch located near the trend recorder.

## 7. REACTOR COOLANT SYSTEM PRESSURE

The original design specified that the RCS pressure signal would be derived from existing channels in the Nuclear Steam supply System Process Protection System. To eliminate the uncertainty that is contributed to the RVLIS level indication due to environmental effects on the RCS pressure signal used for density compensation, and to assure that the vessel level reading can be reasonably used to aid in the detection of ICC conditions, new qualified RCS pressure transmitters were installed outside of containment<sup>1</sup>. Their associated electronics are located in the RVLIS cabinets. These transmitters are used for RVLIS and do not replace the functions of existing RCS pressure transmitter presently located inside containment.

Although these items are deviations from the original design, they do not in any way alter the basic level measurement design nor degrade the system accuracy. These deviations are a result of changes initiated by Westinghouse and S&L to enhance the measurement performance and reliability of the RVLIS specifically for H. B. Robinson, Unit 2, in meeting the specific plant configuration, and to reflect the current Westinghouse RVLIS design.

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<sup>1</sup> These RCS pressure transmitters have been hydraulically isolated similar to the RVLIS level transmitters.