



Serial: RNP-RA/03-0006

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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

REQUEST FOR TECHNICAL SPECIFICATIONS CHANGE REGARDING
INOPERABLE ANALOG ROD POSITION INDICATION FOR CONTROL ROD H-10

Ladies and Gentlemen:

In accordance with the provisions of the Code of Federal Regulations, Title 10, Part 50.90 (10 CFR 50.90) and 10 CFR 50.91(a)(6), Carolina Power & Light (CP&L) Company is submitting a request for an amendment to the Technical Specifications (TS) for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. The proposed amendment would revise the applicable TS requirements for rod position monitoring during the current operating cycle (Cycle 22) to allow the use of an alternate method of determining rod position. The need for this proposed amendment is due to an inoperable analog rod position indicator (ARPI) for Control Rod H-10.

CP&L requests that this amendment be processed as an exigent amendment request, pursuant to 10 CFR 50.91(a)(6), based on the following:

- The failure of the ARPI for Control Rod H-10 was not anticipated.
- Repair efforts have been unable to correct the problem.
- Data obtained during recent repair efforts indicates that the malfunction is located in a portion of the indicator system near the reactor vessel.
- Significant radiation dose would be incurred to work on portions of the indicator system near the reactor vessel during power operation. Therefore, a unit shutdown would be required to repair these portions of the system. Additionally, high ambient and local temperatures in this area create concerns for worker heat stress and safety.
- Repair of the ARPI for Control Rod H-10 may require disassembly of the ARPI coil stack and removal of the reactor missile shield, which would also require a unit shutdown.
- Application of the current TS has required use of the movable incore detector system every eight hours to verify rod position (approximately 90 times per month). This results in excessive system wear and increases the potential for a malfunction or failure.

Foot

The proposed amendment is similar to a license amendment granted for Turkey Point Plant, Unit 4, by letter dated August 20, 2002 (TAC No. MB5703).

Attachment I provides an Affirmation as required by 10 CFR 50.30(b).

Attachment II provides a description of the current condition, a description of the proposed change, a safety assessment of the proposed change, and a determination that the proposed change does not involve a significant hazards consideration.

Attachment III provides a markup of the proposed TS page.

Attachment IV provides a retyped page for the proposed TS.

In accordance with 10 CFR 50.91(b), CP&L is providing the State of South Carolina with a copy of the proposed license amendment.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1), using the criteria in 10 CFR 50.92(c). CP&L has determined the proposed change involves no significant hazards consideration.

If you have any questions concerning this matter, please contact Mr. C. T. Baucom.

Sincerely,



B. L. Fletcher III
Manager - Support Services - Nuclear

CAC/cac

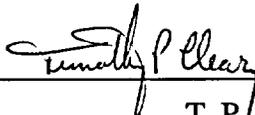
Attachments:

- I. Affirmation
 - II. Request For Technical Specifications Change Regarding Inoperable Analog Rod Position Indication for Control Rod H-10
 - III. Proposed Technical Specifications Page (Mark-Up)
 - IV. Retyped Technical Specifications Page
- c: Mr. T. P. O'Kelley, Director, Bureau of Radiological Health (SC)
Mr. L. A. Reyes, NRC, Region II
Mr. C. Patel, NRC, NRR
NRC Resident Inspector, HBRSEP
Attorney General (SC)

AFFIRMATION

The information contained in letter RNP-RA/03-0006 is true and correct to the best of my information, knowledge and belief; and the sources of my information are officers, employees, contractors, and agents of Carolina Power and Light Company. I declare under penalty of perjury that the foregoing is true and correct.

Executed on: JAN 16 2003



T. P. Cleary
Plant General Manager
HBRSEP, Unit No. 2

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

REQUEST FOR TECHNICAL SPECIFICATIONS CHANGE REGARDING INOPERABLE ANALOG ROD POSITION INDICATION FOR CONTROL ROD H-10

Description of Current Condition

The current H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, Technical Specifications (TS) Limiting Conditions for Operation (LCO) 3.1.7, "Rod Position Indication," establishes the operability requirements, the associated Conditions, Required Actions, and Surveillance Requirements, for the Control Rod Position Indication System. The Required Actions for Condition A require the position of a rod with an inoperable analog rod position indication (ARPI) be verified using the movable incore detector system once per eight hours, in accordance with Required Action A.1, or power is to be reduced to less than or equal to 50% of Rated Thermal Power, in accordance with Required Action A.2.

At 1810 hours on December 22, 2002, based on the erratic behavior of the ARPI for Control Rod H-10 in Shutdown Bank B, Operations personnel declared the ARPI inoperable and entered Condition A of LCO 3.1.7. Required Action A.1 for LCO 3.1.7 requires verification of the position of rods with inoperable ARPI using the movable incore detectors, once per eight hours, when one ARPI per group is inoperable for one or more groups. Condition A also provides Required Action A.2 as an alternative to Required Action A.1 which states, "Reduce THERMAL POWER to \leq 50% RTP," with an associated completion time of eight hours. The position of Control Rod H-10 has been verified to be proper once per eight hours in accordance with Required Action A.1 since the affected ARPI was declared inoperable.

Attempts to determine the cause of this malfunction and to repair the indication have not been successful. Therefore, Required Action A.1 has been in effect since 1810 hours on December 22, 2002. The long-term performance of this Required Action results in excessive wear on the movable incore detector system and increases the potential for a malfunction or failure, so an alternative method of monitoring the position of Control Rod H-10 is proposed.

Description of the Proposed Change

Carolina Power and Light (CP&L) Company proposes to revise the HBRSEP, Unit No. 2, TS LCO 3.1.7, Required Action A.1, to include a footnote which states, "During Cycle 22, the position of Control Rod H-10, Shutdown Bank B, can be determined by verifying gripper coil parameters of the Control Rod Drive Mechanism have not changed state, until the repair of the indication system for this rod is completed."

Safety Assessment

The proposed alternative method of monitoring is based on the use of instrumentation to monitor and record Control Rod H-10 gripper coil parameters. The recorded parameters would be reviewed in accordance with the completion time of once per eight hours, thus accomplishing Required Action A.1 by an alternative method. This alternative method of monitoring the position of Control Rod H-10 provides a positive means of verification that the rod has not moved.

Should review of gripper coil parameters show that Control Rod H-10 may have moved, rod position will be determined using the movable incore detector system in accordance with Required Action B.1 of Condition B. This is considered an appropriately conservative action, since the precise position of the rod may not be known, and entry into Required Action B.1 represents a conservative assumption regarding the magnitude of potential rod motion. Because verification of gripper coil parameters only indicates possible movement of the rod and does not provide indication of actual rod position, entry into Required Action B.1 of Condition B is considered to be the appropriate and conservative course of action.

The position of Control Rod H-10 will continue to be verified using the movable incore detector system every 31 Effective Full Power Days (EFPD) in conjunction with core reactivity measurements required by TS Surveillance Requirement (SR) 3.1.2.1.

The proposed change establishes the monitoring of gripper coil parameters as an alternate method to satisfy TS 3.1.7, Required Action A.1. Other related TS LCOs and SRs are not affected by this change because the proposed alternate method will satisfy the applicable Required Action for inoperability of an ARPI.

The Bases for TS 3.1.7 states the following:

"The ARPI System provides a highly accurate indication of actual control rod position, but at a lower precision than the step counters. This system is based on inductive analog signals from a series of coils spaced along a hollow tube with a center to center distance of 3.75 inches, which is 6 steps. Therefore, the normal indication accuracy of the ARPI System is ± 6 steps (± 3.75 inches), and the maximum uncertainty is ± 12 steps (± 7.5 inches). With an indicated deviation of 12 steps between the group step counter and ARPI, the maximum deviation between actual rod position and the demand position could be 24 steps, or 15 inches.

Control and shutdown rod position accuracy is essential during power operation. Power peaking, ejected rod worth, or SDM limits may be violated in the event of a Design Basis Accident, with control or shutdown rods operating outside their limits undetected. Therefore, the acceptance criteria for rod position indication is that rod positions must be known with sufficient accuracy in order to verify the

core is operating within the group sequence, overlap, design peaking limits, ejected rod worth, and with minimum SDM (LCO 3.1.5, 'Shutdown Bank Insertion Limits,' and LCO 3.1.6, 'Control Bank Insertion Limits'). The rod positions must also be known in order to verify the alignment limits are preserved (LCO 3.1.4, 'Rod Group Alignment Limits'). Control rod positions are continuously monitored to provide operators with information that ensures the plant is operating within the bounds of the accident analysis assumptions."

Additionally, the Bases for Required Action A.1 states:

"When one ARPI channel per group fails, the position of the rod can still be determined by use of the incore movable detectors. Based on experience, normal power operation does not require excessive movement of banks. If a bank has been significantly moved, the Required Action of B.1 or B.2 below is required. Therefore, verification of RCCA position within the Completion Time of 8 hours is adequate for allowing continued full power operation, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small."

The proposed monitoring of gripper coil parameters provides a reasonably similar approach to rod position monitoring as that provided by the movable incore detector system. In particular, the ability to immediately detect a rod drop or misalignment is not directly provided by the movable incore detector system or by the monitoring of gripper coil parameters. Additionally, neither the movable incore detector system, nor the monitoring of gripper coil parameters, provides the capability to verify rod position following a reactor trip or shutdown. Therefore, the monitoring of gripper coil parameters, in lieu of the use of the movable incore detector system, provides a substantially equivalent and acceptable method of monitoring rod position while the ARPI for Control Rod H-10 is inoperable.

As stated previously, if review of gripper coil parameters indicates that Control Rod H-10 may have moved, its position will be determined using the movable incore detector system in accordance with the conservative implementation of Required Action B.1 of Condition B. Therefore, a misalignment will be detected and appropriate actions taken as required by the TS.

A drop or unexpected substantial movement of Control Rod H-10 while the reactor is operating would be immediately detected by the excore neutron detector system. Other indications of the negative reactivity insertion associated with this condition would include power and temperature fluctuations that would be observable by the Reactor Operator. These diverse indications provide a means of determining that a rod drop or misalignment has occurred. Use of these diverse indications to detect a rod drop or unexpected substantial movement are available when an ARPI is not operable, and these indications are not affected by use of the proposed alternate method for verification of Control Rod H-10 position.

A drop or unexpected substantial movement of Control Rod H-10 while the reactor is shutdown or operating at very low power levels would not be readily detectable by use of the available diverse indications discussed above. For this situation, Required Action B.1 of Condition B would be entered based on the presumption that rod movement in excess of 24 steps had occurred.

The inability to verify the insertion of Control Rod H-10 after a reactor trip or shutdown does not affect the ability to maintain the reactor safely shutdown. Existing plant procedures account for the situation where one or more control rods are not fully inserted or cannot be verified as fully inserted. Shutdown margin determinations would account for rods not fully inserted and direct an increase in soluble boron concentration to assure shutdown margins are maintained. Therefore, the inability to verify Control Rod H-10 as fully inserted would be accounted for in the shutdown margin determination, and the applicable safety margins would be maintained. Additionally, the Emergency Operating Procedures provide guidance for the situation where more than one control rod cannot be verified as fully inserted. This is independent of the proposed TS change and would be applicable for any circumstance when more than one rod cannot be verified as fully inserted.

The proposed method for satisfying Required Action A.1 for Control Rod H-10, in conjunction with other indications that are available to the Reactor Operator, will assure that control rod position is accurately understood, that design assumptions are not challenged, and that inoperable, misaligned, or mispositioned control rods can be detected. Therefore, power peaking, ejected rod worth, and shutdown margin can be controlled within acceptable limits as stated in the Bases for TS 3.1.7.

CP&L requests that this amendment be processed as an exigent amendment request, pursuant to 10 CFR 50.91(a)(6), based on the following:

- The failure of the ARPI for Control Rod H-10 was not anticipated.
- Repair efforts have been unable to correct the problem.
- Data obtained during recent repair attempts indicates that the malfunction is located in a portion of the indicator system near the reactor vessel.
- Significant radiation dose would be incurred to work on portions of the indicator system near the reactor vessel during power operation. Therefore, a unit shutdown would be required to repair these portions of the system. Additionally, high ambient and local temperatures in this area create concerns for worker heat stress and safety.
- Repair of the ARPI for Control Rod H-10 may require disassembly of the ARPI coil stack and removal of the reactor missile shield, which would also require a unit shutdown.
- Application of the current TS has required use of the movable incore detector system every eight hours to verify rod position (approximately 90 times per month). This results in excessive system wear and increases the potential for a malfunction or failure.

Repair of the ARPI for Control Rod H-10 will be completed at the earliest opportunity. The repair will likely require the unit to be shutdown and placed in cold shutdown (MODE 5). The proposed alternative method of monitoring Control Rod H-10 provides assurance that the plant can be operated safely until the next shutdown of sufficient duration to effect repairs to the ARPI for Control Rod H-10.

The proposed amendment is similar to a license amendment granted for Turkey Point Plant, Unit 4, by letter dated August 20, 2002 (TAC No. MB5703).

No Significant Hazards Consideration Determination

Carolina Power & Light (CP&L) Company is proposing a change to the Appendix A, Technical Specifications (TS), of Facility Operating License No. DPR-23 for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. This change revises the HBRSEP, Unit No. 2, TS to establish an alternative method of verifying the position of a rod with an inoperable analog rod position indication, thereby allowing safe, continued operation until the next scheduled refueling outage, unless an earlier opportunity is presented to repair the inoperable indication.

An evaluation of the proposed change has been performed in accordance with 10 CFR 50.91(a)(1) regarding no significant hazards considerations, using the standards in 10 CFR 50.92(c). A discussion of these standards as they relate to this amendment request follows:

1. The Proposed Change Does Not Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated.

The proposed change provides an alternative method for verifying the position of one control rod in a shutdown bank of rods. The proposed change meets the intent of the current TS by ensuring verification of the position of this rod once every eight hours. The proposed change only provides an alternative method of monitoring rod position and does not change the assumptions or results of any previously evaluated accident.

Therefore, operation of the facility in accordance with the proposed amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The Proposed Change Does Not Create the Possibility of a New or Different Kind of Accident From Any Previously Evaluated.

As described above, the proposed change only provides an alternative method of determining the position of one control rod in a shutdown bank of rods. No new accident initiators are introduced by the proposed alternative method of performing rod position verification. The proposed change does not affect the reactor protection system or the reactor control system. Hence, no new failure modes are created that would cause a new or different kind of accident from any accident previously evaluated.

Therefore, operation of the facility in accordance with the proposed amendment would not create the possibility of a new or different kind of accident from any previously evaluated.

3. The Proposed Change Does Not Involve a Significant Reduction in the Margin of Safety.

The Bases of TS 3.1.7 states that the operability of the rod position indicators is required to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits. The proposed change does not alter the requirement to determine rod position, but provides an alternative method for determining the position of the affected rod. As a result, the initial conditions of the accident analyses are preserved, and the consequences of previously analyzed accidents are unaffected.

Therefore, operation of the facility in accordance with the proposed amendment would not involve a significant reduction in the margin of safety.

Based on the above discussion, CP&L has determined that the requested change does not involve a significant hazards consideration.

Environmental Impact Consideration

10 CFR 51.22(c)(9) provides criteria for identification of licensing and regulatory actions for categorical exclusion for performing an environmental assessment. A proposed change for an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed change would not (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increases in the amounts of any effluents that may be released offsite; (3) result in a significant increase in individual or cumulative occupational radiation exposure. Carolina Power and Light (CP&L) Company has reviewed this request and determined that the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the proposed amendment. The basis for this determination follows:

Proposed Change

CP&L is proposing a change to the Appendix A, Technical Specifications (TS), of Facility Operating License No. DPR-23 for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. This change establishes an alternative method of verifying the position of a rod with an inoperable analog rod position indication, thereby allowing safe, continued operation until the next scheduled refueling outage, unless an earlier opportunity is presented to repair the inoperable indication.

Basis

The proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) for the following reasons.

1. As demonstrated in the No Significant Hazards Consideration Determination, the proposed change does not involve a significant hazards consideration.
2. As demonstrated in the No Significant Hazards Consideration Determination, the proposed change does not result in a significant increase in the consequences of an accident previously evaluated and does not result in the possibility of a new or different kind of accident. Therefore, the proposed change does not result in a significant change in the types or significant increases in the amounts of any effluents that may be released offsite.
3. The proposed change does not alter any parameters from which the individual and cumulative radiation exposure for HBRSEP, Unit No. 2, results. Therefore, the proposed change does not result in a significant increase in individual or cumulative occupational radiation exposures.

United States Nuclear Regulatory Commission
Attachment III to Serial: RNP-RA/03-0006
2 Pages

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

**REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING
INOPERABLE ANALOG ROD POSITION INDICATION FOR CONTROL ROD H-10**

PROPOSED TECHNICAL SPECIFICATIONS PAGE (MARK-UP)

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

LCO 3.1.7 The Analog Rod Position Indication (ARPI) System and the Demand Position Indication System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each inoperable rod position indicator per group and each demand position indicator per bank.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ARPI per group inoperable for one or more groups.	A.1 Verify the position of the rods with inoperable position indicators by using movable incore detectors.	Once per 8 hours
	<u>OR</u> A.2 Reduce THERMAL POWER to \leq 50% RTP.	8 hours
B. One or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position.	B.1 Verify the position of the rods with inoperable position indicators by using movable incore detectors. <u>OR</u>	4 hours

*

<Insert Footnote>

(continued)

*During Cycle 22, the position of Control Rod H-10, Shutdown Bank B, can be determined by verifying gripper coil parameters of the Control Rod Drive Mechanism have not changed state, until the repair of the indication system for this rod is completed.

United States Nuclear Regulatory Commission
Attachment IV to Serial: RNP-RA/03-0006
2 Pages

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

**REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING
INOPERABLE ANALOG ROD POSITION INDICATION FOR CONTROL ROD H-10**

RETYPE TECHNICAL SPECIFICATIONS PAGE

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

LCO 3.1.7 The Analog Rod Position Indication (ARPI) System and the Demand Position Indication System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTE-----
 Separate Condition entry is allowed for each inoperable rod position indicator per group and each demand position indicator per bank.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ARPI per group inoperable for one or more groups.	A.1 Verify the position of the rods with inoperable position indicators by using movable incore detectors*.	Once per 8 hours
	<u>OR</u>	
	A.2 Reduce THERMAL POWER to \leq 50% RTP.	8 hours
B. One or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position.	B.1 Verify the position of the rods with inoperable position indicators by using movable incore detectors.	4 hours
	<u>OR</u>	
		(continued)

*During Cycle 22, the position of Control Rod H-10, Shutdown Bank B, can be determined by verifying gripper coil parameters of the Control Rod Drive Mechanism have not changed state, until the repair of the indication system for this rod is completed.