Progress Energy

10 CFR 50.90

Serial: RNP-RA/12-0095

SEP 0 6 2012

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/RENEWED LICENSE NO. DPR-23

LICENSE AMENDMENT REQUEST TO DELETE TECHNICAL SPECIFICATION REACTOR PROTECTION SYSTEM TRIP ON STEAM GENERATOR WATER LEVEL LOW COINCIDENT WITH STEAM FLOW/FEEDWATER FLOW MISMATCH

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Carolina Power and Light Company, now doing business as Progress Energy, hereby requests an amendment to the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBRSEP) renewed facility operating license DPR-23, Appendix A, Technical Specifications.

The proposed license amendment will delete Function 14, SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch, from Technical Specifications (TS) Table 3.3.1-1, Reactor Protection System Instrumentation. Progress Energy has installed median signal selector (MSS) modules during the most recent refueling outage. The installation of MSS modules enables the feedwater control system design to meet the requirements of IEEE-279 "IEEE Standard Criteria for Protection Systems for Nuclear Power Generating Stations" related to the potential for adverse control and protection system interactions and eliminates the need for the Steam Generator (SG) Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch Reactor Protection System reactor trip function to meet IEEE-279 criteria.

The Enclosure provides the basis for the proposed change, including a detailed description, technical and regulatory evaluations, environmental considerations, and Progress Energy determination that the proposed change does not involve a significant hazards consideration. The proposed marked-up and retyped TS pages are provided in Attachments 1 and 2 to the Enclosure respectively. Marked-up TS Bases are included in Attachment 3 to the Enclosure for information.

A001
NRR

Progress Energy Carolinas, Inc.
Robinson Nuclear Plant
3581 West Entrance Road
Hartsville, SC 29550

Approval of the proposed amendment is requested by September 5, 2013. Once approved, the amendment shall be implemented prior to exiting the scheduled fall 2013 refueling outage.

This letter contains no new Regulatory Commitments.

In accordance with 10 CFR 50.91(b), a copy of this application is being provided to the State of South Carolina. If you should have any questions regarding this submittal, please contact Mr. Richard Hightower, Supervisor – Regulatory Affairs at (843) 857-1329.

I declare under penalty of perjury that the foregoing is true and correct. Executed On:
September 6, 2012

Sincerely,

Sharon A Wheeler

Sharon A. Wheeler
Manager – Support Services – Nuclear

SAW/sjg

Enclosure

cc: Ms. S. E. Jenkins, Manager, Infectious and Radioactive Waste Management Section (SC)
Mr. V. M. McCree, NRC Region II
Ms. A. T. Billoch-Colon, NRC Project Manager, NRR
NRC Resident Inspectors, HBRSEP
Mr. A. Wilson, Attorney General (SC)

ENCLOSURE

Evaluation of Proposed Change to

Delete Technical Specification Reactor Protection System

Trip on Steam Generator Level – Low Coincident

with Steam Flow/Feedwater Flow Mismatch

ATTACHMENTS:

1 Proposed Technical Specifications Changes (Mark-up)
2 Revised and Retyped Technical Specifications Pages
3 Proposed Changes to Technical Specifications Bases Pages

1.0 SUMMARY DESCRIPTION

Pursuant to 10 CFR 50.90, Carolina Power and Light Company, now doing business as Progress Energy, is requesting an amendment to the H. B. Robinson Steam Electric Plant Unit No. 2 (HBRSEP) renewed facility operating license DPR-23, Appendix A, Technical Specifications (TS) Function14, SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch, from TS 3.3.1 RPS Instrumentation, Table 3.3.1-1, Reactor Protection System Instrumentation.

The design of steam generator (SG) level control instrumentation has been modified to include median signal selector (MSS) modules which use signals from three of the available narrow range steam generator water level instrument channels. The additional signal selection provided by the MSS modules precludes potential adverse control and protection channel interaction that requires actuation of the protection system (reactor trip) to ensure the protection function can be completed.

The proposed schedule supports implementation of the requested change prior to exiting the refueling outage following the current operating cycle, Cycle 28, scheduled for fall 2013.

2.0 DETAILED DESCRIPTION

The current configuration of the feedwater control system includes one median signal selector (MSS) module in each of three feedwater control subsystems. The recent installation of MSS modules allows the feedwater control system to function without the potential adverse control/protection channel interaction that was the basis for inclusion of the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function.

The proposed amendment would delete the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch trip function included as Function 14 in TS RPS Instrumentation, Table 3.3.1-1, Reactor Protection System Instrumentation.

The original HBRSEP control instrumentation design used a single water level signal (one of three taps) for the steam generator water level signal input to the respective feedwater control subsystem. The Reactor Protection System (RPS) uses signals from all three taps on each SG to initiate an RPS trip if at least two of the three signals reach the trip setpoint value. In order to meet the required industry standard regarding the prevention of adverse control and protection system interaction, this original design incorporated the SG Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function.

With this original configuration an adverse control and protection system interaction could result from certain failures that could negate a particular water level channel and simultaneously cause a control system action that would require a subsequent protective action in order to prevent exceeding design safety limits. For example, a postulated failure (high) of one SG water level channel would send a one out of three high level signal to the RPS and, if being used for feedwater control, the failed channel would also send a high level signal to feedwater control circuits causing the feedwater regulating valve to shut. This would cause the SG water level to decrease. In such a scenario, the Institute of Electric and Electronic Engineers Standard 279, "Criteria for Protection Systems for Nuclear Power Generating Stations", imposes the requirement for degradation by a second random failure. The underlying logic is that the initial protection system failure is considered the initiating event for the transient. Therefore, the initial failed channel does not constitute the "single failure" imposed on the protection system by IEEE-279. As such, an additional protection failure must be postulated to occur, and the protection system must continue to be capable of initiating the appropriate protective action.

The limiting postulated single failure in this instance would be a failure (fail as-is) of one of the remaining two SG level channels. This leaves only one operating channel which is insufficient to satisfy the 2/3 logic needed for a SG Water Level Low-Low reactor trip. To eliminate the single failure concern, a diverse trip function on low steam generator water level coincident with a mismatch in feedwater flow and steam flow (SG Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch) was included in the design so that the necessary protective action (i.e., reactor trip) needed to meet safety limits would still function. The SG Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch trip occurs upon a one of two channel steam/feedwater mismatch coupled with a one of two channel low SG water level. The SG water level channels that input to this trip do not include the channel used for control. Therefore, the reduction in water level in the affected SG sensed by the remaining operable level channel, combined with the steam/feedwater mismatch signal, would result in the required reactor trip.

The original design described above has been modified by the installation of new equipment designed to prevent adverse control and protection system interaction from taking place due to failure of steam generator water level signal.

Specifically, during Refueling Outage 27, an engineering change was completed that changed the number of SG water level signals available for feedwater control The three steam generator water level signals used as input to the RPS for each steam generator are now provided to a MSS module. The MSS modules identify the median water level signal of the three water level signals from each steam generator and provide it to the feedwater controllers. Each RPS level signal is provided to the median selector via an isolation device. Signal isolation modules were installed during a previous modification to separate the qualified and non-qualified portions of the control loops. With these changes, failure of one steam generator level measurement channel will no longer result in a transient induced by the feedwater controllers. With this current design, the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch is no longer required to prevent an adverse control/protection system interaction.

3.0 TECHNICAL EVALUATION

The MSS modules receive inputs from the three SG narrow range level channels and will select the median signal for use by the control system. By rejecting the high and low signals, the MSS modules prevent the control system from acting on any single failed protection system instrument channel. Since no adverse control system action will now result from a single, failed protection instrument channel, IEEE-279 does not require consideration of a second random protection system failure. Signals resulting from a single failed high or low SG level channel will be rejected for control purposes and, therefore, will not affect the feedwater control system.

In addition, the HBRSEP instrumentation taps for the SG water level and main steam flow instrument channels are independent of each other. An independent tap design for this instrumentation addresses the concern of meeting the IEEE-279 standard for adverse protection and control interaction with an MSS module when a SG instrument tap is postulated to fail. This concern was identified in Westinghouse Nuclear Safety Advisory Letter (NSAL) 96-004, "Control and Protection Systems Interactions" (Reference 1). In the NSAL, Westinghouse identified a potential control and protection system interaction scenario, applicable to plants with a common instrument tap for SG water level and main steam flow instrumentation, for which an MSS module alone would not be capable of meeting the requirements of IEEE-279. In this case, the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip or other plant modifications may be necessary to meet the requirements of IEEE-279. However, HBRSEP has independent instrument taps for the SG water level and main steam flow instrument channels and, therefore, the concern identified in NSAL 96-004 is not applicable to HBRSEP.

Thus, the MSS modules alleviate the need for the reactor trip on Steam/Feedwater Flow Mismatch and Low SG Level to meet the control/protection system interaction requirements of IEEE-279 for the SG narrow range level channels that provide protection and control functions.

The MSS modules installed at HBRSEP provide similar protection from adverse control and protection system interaction as the median selector switches installed in Beaver Valley Power Station Units 1 and 2 which have demonstrated reliable operation since 2001 and 1987, respectively. Similar in design to the Beaver Valley Power Station median selector switches, the HBRSEP MSS modules also are not part of the protection system and are designed to reduce the frequency of system failures through utilization of highly reliable components and a minimum of additional equipment. It should be noted that failure of an MSS module does not compromise the ability of the protection system to perform its safety related functions (i.e., failure of an MSS module will not disable any protection channel). Also, the design provides the capability for complete on-line testing of MSS modules. The performance of periodic calibrations (not quarterly surveillance tests) verifies the functionality and calibration of each MSS module for each SG. Calibration will typically be scheduled during refueling outages. Calibration on-line following repairs can be performed only while the feedwater control system is in manual control, and each loop calibration will include a functional performance check to verify that the MSS module has been fully restored prior to returning to automatic operation of the feed water control system.

The MSS modules installed at HBRSEP are equivalent to the Beaver Valley Power Station median selector switches in terms of quality, testability and the use of highly reliable components. The combination of demonstrated performance, low likelihood of failure, and the ability to detect failures through continued periodic testing provide the necessary degree of confidence relative to MSS module operational readiness and reliability. In addition to eliminating control/protection system interaction concerns, the reliability of the feedwater control system is enhanced with the use of the MSS modules since potential plant transients (SG level excursions) that could result from the failure of a single SG level instrument channel are eliminated.

Removal of the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch trip from the HBRSEP provides additional benefits. The most significant will be reduced challenges to the overall plant safety systems by eliminating potential spurious and inadvertent reactor trips that could result from this trip function. Greater operational flexibility due to additional SG level operating margin (the low level trip setpoint is higher than the low-low level setpoint) will reduce the potential for SG level related trips. As such, removal of this trip function will enhance safe operation of the plant by reducing the potential for challenges to safety systems and unnecessary plant transients. Removal of this trip function will reduce the active systems that have the potential to cause unnecessary plant transients and that require additional training and operating precautions.

Elimination of the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip from the HBRSEP TS and plant design is consistent with the HBRSEP UFSAR Chapter 15 safety analyses, which does not credit the reactor trip on SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch. However, the UFSAR Chapter 7 licensing basis does require this anticipatory trip to provide protection against postulated adverse control and protection system interactions. As described earlier, this concern has been eliminated with the installation of the MSS modules. The MSS modules provide adequate protection against adverse control/protection system interaction, which was the basis for including the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip in the original plant design. Elimination of this unnecessary reactor trip will enhance plant safety by reducing the potential for unnecessary and unplanned plant transients.

4.0 REGULATORY EVALUATION

4.1 <u>Applicable Regulatory Requirements/Criteria</u>

The General Design Criteria (GDC) applicable to HBRSEP at the time the operating license was issued (July, 1970) were those contained in Proposed Appendix A to lOCFR50, General Design Criteria for Nuclear Power Plants, published in the Federal Register on July 11, 1967. These criteria are described in HBRSEP UFSAR Sections 3.1.1.1 and 3.1.2, The Appendix A GDC, effective in 1971 with subsequent amendments are somewhat different from the proposed 1967 criteria. HBRSEP was evaluated with respect to the proposed 1967 GDC and the original FSAR contained a discussion of the criteria as well as a summary of the criteria by groups.

The following provides discussion of the affects of the proposed change on the capability of HBRSEP for continued compliance with the 1967 GDCs.

The regulatory requirements applicable to reactor control instrumentation are the following:

1967 GDC-12 Instrumentation and Control Systems – Instrumentation and controls shall be provided as required to monitor and maintain within prescribed operating ranges for the essential reactor facility operating variables.

1967 GDC-19 Protection Systems Reliability – Protection system shall be designed for high functional reliability and in-service testability necessary to avoid undue risk to the health and safety of the public.

1967 GDC-20 Protection Systems Redundancy and Independence – Redundancy and independence designed into protection systems shall be sufficient to assure that no single failure or removal from service of any component or channel of such a system will result in loss of the protection function. The redundancy provided shall include, as a minimum, two channels of protection for each protection function to be served.

1967 GDC-22 Separation of Protection and Control Instrumentation – The physical arrangement of the redundant elements of the protection system are such that the probability is reduced that a single physical event will impair the vital function of the system.

The proposed change deletes an RPS reactor trip function that is not credited in the accident analyses. The SG Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function was originally designed to satisfy the single random failure requirement specified in IEEE-279, Section 4.7.3, for preventing adverse control and protective systems interaction. The installed MSS modules provide an acceptable alternative method of preventing interaction between the control and protection functions. Thus, with the installation of the MSS modules, the HBRSEP steam generator water level control system meets the requirements of Section 4.7.3 of IEEE-279 without the SG Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function.

The functions of the protection and control systems credited in the accident analyses are not changed by the proposed elimination of the SG Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function. The proposed change does not diminish the capability of instrumentation and controls to monitor and maintain operating variables within prescribed operating ranges or to function with high functional reliability and in-service testability. The proposed change also does not impact the capability of any protection system to provide a protection function credited in the accident analyses subsequent to a single failure or removal from service of any system component or channel. Furthermore, the proposed change does not increase the probability that a single physical event will impair any vital function of the protection system.

4.2 **Precedents**

This license amendment request proposes to delete Function 14, SG Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch from TS Table 3.3.1-1, Reactor Protection System Instrumentation.

Requests to eliminate reactor trip functions based on the coincidence of low steam generator water level and steam flow and feedwater flow mismatch have been approved for several plants as identified through ADAMS, including the following:

Beaver Valley Unit 1	2001	(Reference 2)
Beaver Valley Unit 2	1990	(Reference 3)
Ginna	1991	(Reference 4)
Prairie Island	1989	(Reference 5)
Salem	1995	(Reference 6)
Diablo Canyon	1990	(Reference 7)

With exception of the Beaver Valley units, the installation of components which select the median value of the available steam generator water level signals to the feedwater control system had not been completed prior to the submittal of the proposed amendments. For the two Beaver Valley units, as for HBRSEP, the components have been installed prior to submittal of the request for deletion/elimination of the trip on low steam generator water level coincident with mismatch between steam flow and feedwater flow.

More recently, a similar license amendment request has been submitted for North Anna Units 1 and 2 and accepted for review (Reference 8) with plans to install the components which select the median value of the available steam generator water level signals to the feedwater control system during the 2013 refueling outages at both North Anna units.

4.3 No Significant Hazards Consideration Determination

This license amendment request proposes to delete Function14, SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch, from TS 3.3.1 RPS Instrumentation, Table 3.3.1-1, Reactor Protection System Instrumentation.

Progress Energy has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. *Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?*

   Response: No

   The initiating conditions and assumptions for accidents described in the Updated Final Safety Analyses Report remain as previously analyzed. The proposed change does not introduce a new accident initiator nor does it introduce changes to any existing accident initiators or scenarios described in the Updated Final Safety Analyses Report. The SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function is not credited for accident mitigation in any accident analyses described in the Updated Final Safety Analyses Report. The SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function was designed to meet the control and protection systems interaction criteria of IEEE-279. The MSS modules prevent adverse control and protection system interaction such that it replaces the need for the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function to satisfy the IEEE-279 requirements. As such, the affected control and protection systems will continue to perform their required functions without adverse interaction, and maintain the capability to shut down the reactor when required on Low-Low Steam Generator water level. The ability to mitigate a loss of heat sink accident previously evaluated is unaffected.

   Based on the above, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. *Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?*

   Response: No

   The substitution of the MSS modules for the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function will not introduce any new failure modes to the required protection functions. The MSS modules only interact with the feedwater control system. The Steam Generator Water Level Low-Low protection function is not affected by this change. Isolation devices upstream of the MSS modules ensure that the Steam Generator Water Level Low-Low protection function is not affected. The MSS modules utilize highly reliable components in a configuration that relies on a minimum of additional equipment. Components used in the MSS modules are of a quality consistent with low failure rates and minimum maintenance requirements, and conform to protection system requirements. Furthermore, the design provides the capability for complete unit testing that provides determination of credible system failures. It is through these features that the overall design of the MSS modules minimizes the occurrence of undetected failures that may exist between test intervals.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. *Does the change involve a significant reduction in a margin of safety?*

Response: No

The proposed amendment does not involve revisions to any safety analysis limits or safety system settings that will adversely impact plant safety. The proposed amendment does not alter the functional capabilities assumed in a safety analysis for any system, structure, or component important to the mitigation and control of design bases accident conditions within the facility. Nor does this amendment revise any parameters or operating restrictions that are assumptions of a design basis accident. In addition, the proposed amendment does not affect the ability of safety systems to ensure that the facility can be placed and maintained in a shutdown condition for extended periods of time.

The ability of the Steam Generator Water Level Low-Low reactor trip function credited in the safety analysis to protect against a sudden loss of heat sink event is not affected by the proposed change. Since the Steam Generator Low-Low Level trip is credited alone as providing complete protection for the accident transients that result in low steam generator level, eliminating the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function will not change any safety analysis conclusion for any analyzed accident described in the Updated Final Safety Analyses Report.

The MSS modules prevent adverse control and protection system interaction such that it replaces the need for the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function and satisfies the IEEE-279 requirements. The proposed change improves the margin of safety since removal of the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch reactor trip function decreases the potential for challenges to plant safety systems. These changes result in a reduction in the potential for unnecessary plant transients.

The Technical Specifications continue to assure that the applicable operating parameters and systems are maintained within the design requirements and safety analysis assumptions. Therefore, the elimination of this trip function will not result in a significant reduction in the margin of safety as defined in the Updated Final Safety Analyses Report or Technical Specifications. Therefore, the proposed change does not involve a significant reduction in any margin of safety.

4.4 Conclusions

The SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch Reactor Protection System Trip function (Function 14 of Technical Specification 3.3.1 RPS Instrumentation, Table 3.3.1-1, Reactor Protection System Instrumentation) provided the capability of the original design of HBRSEP control instrumentation to meet requirements of industry standards (IEEE-279) regarding the prevention of adverse control and protection system interaction. HBRSEP has modified the design of the feedwater control system to include median signal selector modules which pass the median value of the three narrow range steam generator water level signals used by the Reactor Protection System for the 2/3 RPS trip function on Steam Generator Water Level – Low Low credited in the accident analyses. With this modification, the SG Water Level – Low, Coincident with Steam Flow/Feedwater Flow Mismatch Reactor Protection System Trip function, which is not credited in the accident analyses, is not required to meet industry standards (IEEE-279) for prevention of adverse control and protection system interaction. Based on the considerations above; 1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, 2) such activities will be conducted in compliance with the Commission's regulations, and, 3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

HBRSEP has evaluated the proposed amendment for environmental considerations. The review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, and would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set for in 10 CFR 51.22(c) (9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. Westinghouse Nuclear Safety Advisory Letter NSAL-96-004 “Control and Protection Interaction August 14, 1996 (ADAMS Accession #ML052570651)

2. NRC Letter to FirstEnergy Nuclear Operating Company, "Beaver Valley Power Station, Unit No. 1 – Issuance of Amendment Re: Deletion of the Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level Reactor Trip (TAC NO. MB0837) August 8, 2001 (ADAMS Accession # ML011410204)

3. NRC Letter to Duquesne Light Company, "Beaver Valley Unit 2 – Issuance of Amendment (TAC NO. 74573) February 20, 1990 (ADAMS Accession #ML003772209)

4. NRC Letter to Rochester Gas & Electric Corporation, "Issuance of Amendment No. 41 to Facility License No. DPR-18 – R. E. Ginna Nuclear Power Plant (TACT NO. 77814)" February 28, 1991 (ADAMS Accession # ML010540440)

5. NRC Letter to Northern States Power Company, "Amendments Nos. 87 and 80 to Facility Operating Licenses Nos. DPR-42 and DPR-60: Elimination of Steam/Feedwater Mismatch Flow and Low Feedwater Reactor Trips (TACS NOS. 69175 AND 69174) April 3, 1989 (ADAMS Accession # ML022210127)

6. NRC Letter to Public Service Electric & Gas, "Salem Generating Station, Unit Nos. 1 and 2 (TAC NOS. M85782 AND M85783)" August 7, 1995 (ADAMS Accession # ML011730350)

7. NRC Letter to Pacific Gas and Electric Company, "Issuance of Amendments (TAC NOS. 74902 AND 74903)" July 12, 1990 (ADAMS Accession # ML022340113)

8. NRC Email Capture "North Anna Power Station, Units 1 and 2 – Acceptance Review, Proposed Elimination of the SG Water level Low Coincident with Steam Flow/Feedwater Flow Mismatch Reactor Trip (TAC NOS. ME8566, ME8567)-ML12094A307

Enclosure to Serial: RNP-RA/12-0095
Attachment 1
2 Pages (including cover page)

ATTACHMENT 1

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

PROPOSED TECHNICAL SPECIFICATIONS CHANGES (MARK-UP)

Deleted

Table 3.3.1-1 (page 4 of 7)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT (1)
14. ~~SG Water Level - Low~~	~~1,2~~	~~2 per SG~~	~~E~~	~~SR 3.3.1.1~~ ~~SR 3.3.1.7~~ ~~SR 3.3.1.10~~	~~≥ 29.36%~~	~~30%~~
~~Coincident with Steam Flow/Feedwater Flow Mismatch~~	~~1,2~~	~~2 per SG~~	~~E~~	~~SR 3.3.1.1~~ ~~SR 3.3.1.7~~ ~~SR 3.3.1.10~~	~~≤ 7.01 E5 lbm/hr~~	~~6.4 E5 lbm/hr~~
15. Turbine Trip						
a. Low Auto Stop Oil Pressure	1(f)	3	P	SR 3.3.1.10 SR 3.3.1.15	≥ 40.87 psig	45 psig
b. Turbine Stop Valve Closure	1(f)	2	P	SR 3.3.1.15	NA	NA
16. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	Q	SR 3.3.1.14	NA	NA

(continued)

(1) A channel is OPERABLE with an actual Trip Setpoint value found outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint.

(f) Above the P-8 (Power Range Neutron Flux) interlock.

Enclosure to Serial: RNP-RA/12-0095
Attachment 2
2 Pages (including cover page)

ATTACHMENT 2

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

REVISED AND RETYPED TECHNICAL SPECIFICATIONS PAGES

Table 3.3.1-1 (page 4 of 7)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT (1)
14. Deleted						
15. Turbine Trip						
a. Low Auto Stop Oil Pressure	$1^{(f)}$	3	P	SR 3.3.1.10 SR 3.3.1.15	≥40.87 psig	45 psig
b. Turbine Stop Valve Closure	$1^{(f)}$	2	P	SR 3.3.1.15	NA	NA
16. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	Q	SR 3.3.1.14	NA	NA

(continued)

(1) A channel is OPERABLE with an actual Trip Setpoint value found outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint.

(f) Above the P-8 (Power Range Neutron Flux) interlock.

Enclosure to Serial: RNP-RA/12-0095
Attachment 3
4 Pages (including cover page)

ATTACHMENT 3

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

PROPOSED CHANGES TO TECHNICAL SPECIFICATIONS BASES PAGES

Deleted

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

13\. Steam Generator Water Level—Low Low (continued)

operating or even critical. Decay heat removal is accomplished by the AFW and MFW Systems in MODE 3 and by the Residual Heat Removal (RHR) System in MODE 4, 5, or 6.

14\. ~~Steam Generator Water Level—Low, Coincident With Steam Flow/Feedwater Flow Mismatch~~

~~SG Water Level—Low, in conjunction with the Steam Flow/Feedwater Flow Mismatch, ensures that protection is provided against a loss of heat sink prior to uncovering the SG tubes. This trip Function provides diverse protection for loss of heat sink upon failure of the controlling SG Level channel in the non-conservative (high) direction, since the controlling level channel is shared with the RPS. Additional discussion of control-protection interaction requirements is provided in Reference 5. In addition to a decreasing water level in the SG, the difference between feedwater flow and steam flow is evaluated to determine if feedwater flow is significantly less than steam flow. With less feedwater flow than steam flow, SG level will decrease at a rate dependent upon the magnitude of the difference in flow rates. There are two SG level channels and two Steam Flow/Feedwater Flow Mismatch channels per SG. One narrow range level channel sensing a low level coincident with one Steam Flow/Feedwater Flow Mismatch channel sensing flow mismatch (steam flow greater than feed flow) will actuate a reactor trip.~~

~~The LCO requires two channels of SG Water Level—Low coincident with Steam Flow/Feedwater Flow Mismatch to be OPERABLE.~~

~~In MODE 1 or 2, when the reactor requires a heat sink, the SG Water Level—Low coincident with Steam Flow/Feedwater Flow Mismatch trip must be OPERABLE. The normal source of water for the SGs is the MFW System (not safety related). The MFW System is in operation in MODE 1 or 2. The AFW System is the safety related backup source of water to ensure that the SGs remain the heat sink for the reactor. During normal startups and shutdowns, the MFW System provides feedwater to~~

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

~~14. Steam Generator Water Level-Low, Coincident With Steam Flow/Feedwater Flow Mismatch (continued)~~

~~maintain SG level. In MODE 3, 4, 5, or 6, the SG Water Level—Low coincident with Steam Flow/Feedwater Flow Mismatch Function does not have to be OPERABLE because the reactor is not operating or even critical. Decay heat removal is accomplished by the AFW and MFW Systems in MODE 3 and by the RHR System in MODE 4, 5, or 6. The MFW System is in operation only in MODE 1 or 2 and, therefore, this trip Function need only be OPERABLE in these MODES.~~

15. Turbine Trip

a. Turbine Trip—Low Auto-Stop Oil Pressure

The Turbine Trip—Low Auto-Stop Oil Pressure trip Function anticipates the loss of heat removal capabilities of the secondary system following a turbine trip. This trip Function acts to minimize the pressure/temperature transient on the reactor. Any turbine trip from a power level below the P-8 setpoint, approximately 40% power, will not actuate a reactor trip. Three pressure switches monitor the auto-stop oil pressure in the Turbine Trip System. A low pressure condition sensed by two-out-of-three pressure switches will actuate a reactor trip. These pressure switches do not provide any input to the control system. The unit is designed to withstand a complete loss of load and not sustain core damage or challenge the RCS pressure limitations. Core protection is provided by the Pressurizer Pressure—High trip Function and RCS integrity is ensured by the pressurizer safety valves.

The LCO requires three channels of Turbine Trip—Low Auto-Stop Oil Pressure to be OPERABLE in MODE 1 above P-8.

Below the P-8 setpoint, a turbine trip does not actuate a reactor trip. In MODE 3, 4, 5, or 6, there is no potential for a turbine trip, and the Turbine Trip—Low Auto-Stop Oil Pressure trip Function does not need to be OPERABLE.

(continued)

BASES

ACTIONS

D.1.1, D.1.2, D.2.1, D.2.2, and D.3 (continued)

6 hour Completion Time and the 12 hour Frequency are consistent with LCO 3.2.4, "QUADRANT POWER TILT RATIO (QPTR)."

As an alternative to the above Actions, the plant must be placed in a MODE where this Function is no longer required OPERABLE. Twelve hours are allowed to place the plant in MODE 3. This is a reasonable time, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems. If Required Actions cannot be completed within their allowed Completion Times, LCO 3.0.3 must be entered.

Required Action D.2.2 has been modified by a Note which only requires SR 3.2.4.2 to be performed if the Power Range Neutron Flux input to QPTR becomes inoperable. Failure of a component in the Power Range Neutron Flux Channel which renders the High Flux Trip Function inoperable may not affect the capability to monitor QPTR. As such, determining QPTR using the movable incore detectors once per 12 hours may not be necessary.

E.1 and E.2

Condition E applies to the following reactor trip Functions:

- Power Range Neutron Flux – Low;
- Overtemperature ΔT;
- Overpower ΔT;
- Pressurizer Pressure – High;
- SG Water Level – Low Low; and
- ~~SG Water Level – Low coincident with Steam Flow/ Feedwater Flow Mismatch~~.

A known inoperable channel must be placed in the tripped condition within 6 hours. Placing the channel in the tripped condition results in a partial trip condition

(continued)