



Serial: RNP-RA/04-0067

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United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

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

**REQUEST FOR TECHNICAL SPECIFICATIONS CHANGES
REGARDING REACTOR PROTECTION SYSTEM AND ENGINEERED
SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TABLES**

Ladies and Gentlemen:

In accordance with the provisions of 10 CFR 50.90, Progress Energy Carolinas, Inc. (PEC), also known as Carolina Power and Light Company, is submitting a request for an amendment to the Technical Specifications (TS) contained in Appendix A of the Operating License for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2.

The proposed amendment revises the Allowable Values for the following Reactor Protection System (RPS) instrumentation functions: Intermediate Range Neutron Flux, Reactor Coolant Flow – Low, Steam Generator (SG) Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch, and Intermediate Range Neutron Flux (P-6) Interlock. Additionally, these changes revise the Allowable Value for the Engineered Safety Feature Actuation System Instrumentation function for High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure – Low. Also included is the proposed deletion of an unnecessary footnote associated with the applicability for the Automatic Trip Logic RPS instrumentation function.

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

Attachment II provides a description of the current condition, a description and justification of the proposed change, a No Significant Hazards Consideration Determination, and an Environmental Impact Consideration.

Attachment III provides a markup of the affected TS pages.

Attachment IV provides a retyped version of the affected TS pages.

Attachment V provides calculations in support of the proposed Allowable Value changes.

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

A001

Attachment VI provides the setpoint methodology procedure used in the determination of the proposed Allowable Value changes.

In accordance with 10 CFR 50.91(b), PEC is providing the State of South Carolina with a copy of this license amendment request.

PEC requests approval of this license amendment request by May 15, 2005.

If you have any questions concerning this matter, please contact Mr. C. T. Baucom at (843) 857-1253.

Sincerely,



J. F. Lucas

Manager – Support Services – Nuclear

Attachments:

- I. Affirmation
- II. Request for Technical Specifications Changes Regarding Reactor Protection System and Engineered Safety Feature Actuation System Instrumentation Tables
- III. Markup of Technical Specifications Pages
- IV. Retyped Technical Specifications Pages
- V. Supporting Calculations
- VI. Setpoint Methodology Procedure


CTB/cac

c: Mr. T. P. O'Kelley, Director, Bureau of Radiological Health (SC)
Mr. H. J. Porter, Director, Division of Radioactive Waste Management (SC)
Dr. W. D. Travers, NRC, Region II
Mr. C. P. Patel, NRC, NRR
NRC Resident Inspector, HBRSEP
Attorney General (SC)

AFFIRMATION

The information contained in letter RNP-RA/04-0067 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 Progress Energy Carolinas, Inc., also known as Carolina Power and Light Company. I declare under penalty of perjury that the foregoing is true and correct.

Executed On: 20 Aug. 2004



J. W. Moyer
Vice President, HBRSEP, Unit No. 2

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

REQUEST FOR TECHNICAL SPECIFICATIONS CHANGES REGARDING REACTOR PROTECTION SYSTEM AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TABLES

Description of Current Condition

Appendix A, Technical Specifications (TS), to Operating License (OL) No. DPR-23, for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, establishes the Limiting Condition for Operation (LCO) requirements for the following Protection Functions in Section 3.3:

- TS Table 3.3.1-1, Reactor Protection System Instrumentation, Function 3, Intermediate Range Neutron Flux.
- TS Table 3.3.1-1, Reactor Protection System Instrumentation, Function 9, Reactor Coolant Flow – Low.
- TS Table 3.3.1-1, Reactor Protection System Instrumentation, Function 14, Steam Generator (SG) Water Level – Low Coincident with Steam Flow – Feedwater Flow Mismatch.
- TS Table 3.3.1-1, Reactor Protection System Instrumentation, Function 17.a, Intermediate Range Neutron Flux (P-6) Interlock.
- TS Table 3.3.1-1, Reactor Protection System Instrumentation, Function 20, Automatic Trip Logic.
- TS Table 3.3.2-1, Engineered Safety Feature Actuation System Instrumentation, Function 1.g, High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure – Low.

Description and Justification of the Proposed Changes

The proposed changes associated with the Allowable Values for the functions listed in TS Section 3.3.1 are consistent with the TS Bases, which state:

“Setpoints in accordance with the Allowable Value ensure that [safety limits] SLs are not violated during [anticipated operational occurrences] AOOs (and that the consequences of [design basis accidents] DBAs will be acceptable, providing the unit is operated from within the LCOs at the onset of the AOO or DBA and the equipment functions as designed). Note that in the accompanying LCO 3.3.1, the Allowable Values are the [limiting safety system settings] LSSS.”

The Bases for TS Section 3.3.1 further state:

“The Nominal Trip Setpoints and Allowable Values listed in Table 3.3.1-1 are based on the methodology described in the company setpoint methodology procedure (Ref. 8), which incorporates all of the applicable uncertainties for each channel. The magnitudes of these uncertainties are factored into the determination of each Nominal Trip Setpoint. All field sensors and signal processing equipment for these channels are assumed to operate within the allowances of these uncertainty magnitudes.”

The proposed change associated with the Allowable Value for the function listed in TS Section 3.3.2 is consistent with the TS Bases, which state:

“Setpoints in accordance with the Allowable Value ensure that the consequences of Design Basis Accidents (DBAs) will be acceptable, providing the unit is operated from within the LCOs at the onset of the DBA and the equipment functions as designed.”

The Bases for TS Section 3.3.2 further state:

“The Nominal Trip setpoints and Allowable Values listed in Table 3.3.2-1, are based on the methodology described in the company setpoint methodology procedure (Ref. 9), which incorporates all of the applicable uncertainties for each channel. The magnitudes of these uncertainties are factored into the determination of each Nominal Trip Setpoint. All field sensors and signal processing equipment for these channels are assumed to operate within the allowances of these uncertainty magnitudes.”

The company setpoint methodology procedure (listed as Ref. 8 and 9 in the TS Bases excerpt paragraphs) is listed in the HBRSEP, Unit No. 2, TS as “Attachment VII to CP&L’s letter to NRC dated May 30, 1997, ‘H. B. Robinson Steam Electric Plant, Unit No. 2, Response to Request for Additional Information Regarding the Technical Specifications Change Request to Convert to the Improved Standard Technical Specifications.’” The current methods being used for HBRSEP, Unit No. 2, setpoint calculations remain consistent with this reference and are contained in Progress Energy Nuclear Generation Group Procedure, EGR-NGGC-0153, “Engineering Instrument Setpoints.” A copy of this procedure is provided in Attachment VI to this letter.

Section 9.1.1 of procedure EGR-NGGC-0153 states the following:

“Application of the methodology described in this procedure is appropriate for Limiting Safety System Settings as defined in 10 CFR 50.36, and for operator indications when required by the emergency response guidelines. Where Limiting Safety System Settings have been established for nuclear plant instruments by the plant Technical Specifications, the settings are to be chosen so that automatic protective action will occur to protect against the most severe abnormal situation without exceeding analytical safety limits. Instruments that are utilized to ensure that these safety limits are not exceeded will provide adequate margins to safety which are to be documented through the use of instrument uncertainty and scaling calculations.”

The methodology used in the determination of the proposed Allowable Value changes is described in EGR-NGGC-0153, “Engineering Instrument Setpoints.” A specific description of and justification for each of these proposed changes is provided as follows:

Intermediate Range Neutron Flux

TS Table 3.3.1-1, Reactor Protection System Instrumentation, Function 3, Intermediate Range Neutron Flux, is being revised to change the Allowable Value from $\leq 37.02\%$ to $\leq 36.40\%$, and TS Table 3.3.1-1, Reactor Protection System Instrumentation, Function 17.a, Intermediate Range Neutron Flux (P-6) Interlock, is being revised to change the Allowable Value from $\geq 7.29 \text{ E-11}$ amps to $\geq 9.34 \text{ E-11}$ amps. These changes to the Allowable Values for these functions are based on the calculation RNP-I/INST-1135, "Nuclear Instrumentation Intermediate Range Error Analysis." A copy of that calculation is provided in Attachment V to this letter.

The proposed changes to these Allowable Values provide more restrictive limits for these parameters. Specifically, the proposed revision to the Allowable Value for the Intermediate Range Neutron Flux trip from $\leq 37.02\%$ to $\leq 36.40\%$ reduces the operability limit range for this trip function. Similarly, the increase in the Intermediate Range Neutron Flux (P-6) Interlock Allowable Value from $\geq 7.29 \text{ E-11}$ amps to $\geq 9.34 \text{ E-11}$ amps reduces the operability limit range for this interlock.

The proposed change to the Allowable Value for the Intermediate Range Neutron Flux trip reactor protection function will ensure that the operability limit for this function is properly established. Therefore, the consequences of Design Basis Accidents (DBAs) will be acceptable, providing the unit is operated from within the LCOs at the onset of the DBA, and the equipment functions as designed.

Reactor Coolant Flow – Low

TS Table 3.3.1-1, Reactor Protection System Instrumentation, Function 9, Reactor Coolant Flow – Low, is being revised to change the Allowable Value for both the "Single Loop" and "Two Loops" sub-items from $\geq 93.47\%$ to $\geq 93.45\%$. These changes to the Allowable Values for these functions are based on the calculation RNP-I/INST-1128, "RCS Flow Instrument Uncertainty and Scaling Calculation." A copy of that calculation is provided in Attachment V to this letter.

The proposed changes to these Allowable Values provide slightly less restrictive limits for these parameters. Specifically, the proposed revisions to the Allowable Values for the Reactor Coolant Flow – Low RPS instrumentation functions slightly increase the operability limit range for these trip functions.

The proposed changes to the Allowable Values for the Reactor Coolant Flow – Low reactor protection functions will ensure that the operability limits for these functions are properly established. Therefore, the consequences of DBAs will be acceptable, providing the unit is operated from within the LCOs at the onset of the DBA, and the equipment functions as designed.

Steam Generator Water Level – Low

TS Table 3.3.1-1, Reactor Protection System Instrumentation, Function 14, SG Water Level – Low Coincident with Steam Flow – Feedwater Flow Mismatch, is being revised to change the Allowable Value from $\leq 7.06 \text{ E5 lbm/hr}$ to $\leq 7.01 \text{ E5 lbm/hr}$. This change to the Allowable Value is based on the calculation RNP-I/INST-1041, “Feedwater Flow Loop Uncertainty and Scaling Calculation.” A copy of that calculation is provided in Attachment V to this letter.

The proposed change to this Allowable Value provides a slightly more restrictive limit for this parameter. Specifically, the proposed revision to the Allowable Value for the SG Water Level – Low Coincident with Steam Flow – Feedwater Flow Mismatch reactor protection function slightly decreases the operability limit range for this trip function

The proposed change to the Allowable Value for the SG Water Level – Low Coincident with Steam Flow – Feedwater Flow Mismatch reactor protection function will ensure that the operability limit for this function is properly established. Therefore, the consequences of DBAs will be acceptable, providing the unit is operated from within the LCOs at the onset of the DBA, and the equipment functions as designed.

Automatic Trip Logic

TS Table 3.3.1-1, Reactor Protection System Instrumentation, Function 20, Automatic Trip Logic, is being revised to remove an unnecessary note associated with the Applicable Modes for this function. Note “j” is associated with MODE 1 for this function. Note “j” states, “Below the P-6 (Intermediate Range Neutron Flux) interlock for the logic inputs from Source Range Neutron Flux detector channels.” This note is not needed, because the Automatic Trip Logic function is only required to be operable when the associated reactor protection functions are required to be operable. This change also revises the applicability for this LCO to be consistent with the current version of NUREG-1431, “Improved Standard Technical Specifications for Westinghouse Plants.”

High Steam Line Flow in Two Steam Lines

TS Table 3.3.2-1, Engineered Safety Feature Actuation System Instrumentation, Function 1.g, High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure – Low, is being revised to change the Allowable Value from $\geq 605.05 \text{ psig}$ to $\geq 597.76 \text{ psig}$. This change to the Allowable Value is based on the calculation RNP-I/INST-1043, “Main Steam Pressure Uncertainty and Scaling Calculation.” A copy of that calculation is provided in Attachment V to this letter.

The proposed change to the Allowable Value for the High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure – Low engineered safety feature safety injection (SI) actuation function is a less restrictive change based on the results of the associated setpoint calculation. The proposed Allowable Value will continue to provide an appropriate operability limit for this SI actuation function.

No Significant Hazards Consideration Determination

Progress Energy Carolinas, Inc. (PEC), also known as Carolina Power and Light Company, is proposing changes to Appendix A, Technical Specifications, of Facility Operating License No. DPR-23, for the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. The proposed changes revise the Allowable Values for the following Reactor Protection System (RPS) instrumentation functions: Intermediate Range Neutron Flux, Reactor Coolant Flow – Low, Steam Generator (SG) Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch, and Intermediate Range Neutron Flux (P-6) Interlock. Additionally, these changes revise the Allowable Value for the Engineered Safety Feature Actuation System Instrumentation function for High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure – Low. Also included is the proposed deletion of an unnecessary footnote associated with the applicability for the Automatic Trip Logic RPS instrumentation function.

An evaluation of the proposed changes 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. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposal to revise the Allowable Values for the affected reactor protection and engineered safety feature actuation functions was developed in accordance with the current setpoint methodology for HBRSEP, Unit No. 2, thus ensuring that the probability and consequences of previously evaluated accidents are not significantly increased. The proposed deletion of the unnecessary footnote associated with the Automatic Trip Logic reactor protection instrumentation function does not change the requirements for operability of this function. Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated, because the factors that are used to determine the probability and consequences of accidents are not being affected.

2. Do the proposed changes create the possibility of a new or different kind of accident from any previously evaluated?

The proposed changes will continue to ensure that the operability of the previously described functions will be appropriately maintained. No physical changes to the HBRSEP, Unit No. 2, systems, structures, or components are being implemented. There are no new or different accident initiators or sequences being created by the proposed Technical Specifications changes. Therefore, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Do the proposed changes involve a significant reduction in the margin of safety?

The proposed changes, as previously described, ensure that the margin of safety for the applicable fission product barriers that are protected by these functions will continue to be maintained. This conclusion is based on the use of a valid setpoint methodology for determining the Allowable Values for the reactor protection and engineered safety feature actuation functions. Therefore, these changes do not involve a significant reduction in the margin of safety.

Based on the preceding discussion, the requested changes do 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 (i) involve a significant hazards consideration; (ii) result in a significant change in the types or significant increases in the amounts of any effluents that may be released offsite; (iii) result in a significant increase in individual or cumulative occupational radiation exposure. PEC has reviewed this request and determined that the proposed changes meet 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

Progress Energy Carolinas, Inc. (PEC), also known as Carolina Power and Light Company, is proposing changes to Appendix A, Technical Specifications, of Facility Operating License No. DPR-23, for the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. The proposed changes revise the Allowable Values for the following Reactor Protection System (RPS) instrumentation functions: Intermediate Range Neutron Flux, Reactor Coolant Flow – Low, Steam Generator (SG) Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch, and Intermediate Range Neutron Flux (P-6) Interlock. Additionally, these changes revise the Allowable Value for the Engineered Safety Feature Actuation System Instrumentation function for High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure – Low. Also included is the proposed deletion of an unnecessary footnote associated with the applicability for the Automatic Trip Logic RPS instrumentation function.

Basis

The proposed changes meet 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 changes do not involve a significant hazards consideration.
2. The proposed changes revise the Allowable Values for the following RPS instrumentation functions: Intermediate Range Neutron Flux, Reactor Coolant Flow – Low, Steam Generator (SG) Water Level – Low Coincident with Steam Flow – Feedwater Flow Mismatch, and Intermediate Range Neutron Flux (P-6) Interlock. Additionally, these changes revise the Allowable Value for the Engineered Safety Feature Actuation System instrumentation function for High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure – Low. Also included is the proposed deletion of an unnecessary footnote associated with the applicability for the Automatic Trip Logic RPS instrumentation function. These changes do not affect the generation or control of effluents. Therefore, the proposed changes will 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 changes, as previously described, do not affect any parameters that would cause an increase in occupational radiation exposure. There are no proposed physical changes to the facility or facility processes that would result in increased radiation exposure to plant personnel. Therefore, the proposed changes will not result in a significant increase in individual or cumulative occupational radiation exposure.

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

**REQUEST FOR TECHNICAL SPECIFICATIONS CHANGES
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SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TABLES**

MARKUP OF TECHNICAL SPECIFICATIONS PAGES

RPS Instrumentation
3.3.1

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

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT (1)
1. Manual Reactor Trip	1.2	2	B	SR 3.3.1.14	NA	NA
	3(a), 4(a), 5(a)	2	C	SR 3.3.1.14	NA	NA
2. Power Range Neutron Flux						
a. High	1.2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.11	≤ 110.93% RTP	108% RTP (2)
b. Low	1(b).2	4	E	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 26.93% RTP	24% RTP
3. Intermediate Range Neutron Flux	1(b), 2(c)	2	F,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 32.02% RTP	25% RTP
	2(d)	2	H	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 32.02% RTP	25% RTP
4. Source Range Neutron Flux	2(d)	2	I,J	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 1.28 E5 cps	1.0 E5 cps
	3(a), 4(a), 5(a)	2	J,K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	≤ 1.28 E5 cps	1.0 E5 cps
	3(e), 4(e), 5(e)	1	L	SR 3.3.1.1 SR 3.3.1.11	N/A	N/A

(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.
- (2) The Nominal Trip Setpoint is as stated unless reduced as required by one or more of the following requirements:
LCD 3.2.1 Required Action A.2.2; LCD 3.2.2 Required Action A.1.2.2; or LCD 3.7.1 Required Action B.2.
- (a) With Rod Control System capable of rod withdrawal, or one or more rods not fully inserted.
- (b) Below the P-10 (Power Range Neutron Flux) interlock.
- (c) Above the P-6 (Intermediate Range Neutron Flux) interlock.
- (d) Below the P-6 (Intermediate Range Neutron Flux) interlock.
- (e) With the RTBs open. In this condition, source range Function does not provide reactor trip but does provide indication and alarm.

36.40%

RPS Instrumentation
3.3.1

Table 3.3.1-1 (page 3 of 7)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT (1)
9. Reactor Coolant Flow - Low						
a. Single Loop	1(g)	3 per loop	N	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	93.47%	94.26%
b. Two Loops	1(h)	3 per loop	H	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	93.47%	94.26%
10. Reactor Coolant Pump (RCP) Breaker Position						
a. Single Loop	1(g)	1 per RCP	O	SR 3.3.1.14	NA	NA
b. Two Loops	1(h)	1 per RCP	H	SR 3.3.1.14	NA	NA
11. Undervoltage RCPs	1(f)	1 per bus	H	SR 3.3.1.9 SR 3.3.1.10	≥ 2959 V	3120 V
12. Underfrequency RCPs	1(f)	1 per bus	H	SR 3.3.1.10 SR 3.3.1.14	≥ 57.84 Hz	58.2 Hz
13. Steam Generator (SG) Water Level - Low Low	1.2	3 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 15.36%	16%

(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-7 (Low Power Reactor Trips Block) interlock.
- (g) Above the P-8 (Power Range Neutron Flux) interlock.
- (h) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock.

93.45%

RPS Instrumentation
3.3.1

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	$\approx 29.36\%$	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	$\approx \boxed{7.06 \text{ E5}}$ 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-7 (Low Power Reactor Trips Block) interlock.

7.01 E5

RPS Instrumentation 3.3.1

Table 3.3.1-1 (page 5 of 7)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT (1)
17. Reactor Protection System Interlocks						
a. Intermediate Range Neutron Flux, P-6	2(d)	2	S	SR 3.3.1.11 SR 3.3.1.13	≈ 2.29 E-11 amp	1 E-10 amp
b. Low Power Reactor Trips Block, P-7	1	1 per train	T	SR 3.3.1.13 SR 3.3.1.14	NA	NA
c. Power Range Neutron Flux, P-8	1	4	T	SR 3.3.1.11 SR 3.3.1.13	$\leq 42.94\%$ RTP	40% RTP
d. Power Range Neutron Flux, P-10	1,2	4	S	SR 3.3.1.11 SR 3.3.1.13	$\approx 7.06\%$ RTP and \approx 12.94% RTP	10% RTP
e. Turbine Impulse Pressure, P-7 input	1	2	T	SR 3.3.1.1 SR 3.3.1.10 SR 3.3.1.13	$\leq 10.71\%$ turbine power	10% turbine power
18. Reactor Trip Breakers (i)	1,2	2 trains	R,V	SR 3.3.1.4	NA	NA
	3(a), 4(a), 5(a)	2 trains	C,V	SR 3.3.1.4	NA	NA
19. Reactor Trip Breaker	1,2	1 each per RTB	U	SR 3.3.1.4	NA	NA
Undervoltage and Shunt Trip Mechanisms	3(a), 4(a), 5(a)	1 each per RTB	C	SR 3.3.1.4	NA	NA
20. Automatic Trip Logic	1,2	2 trains	Q,V	SR 3.3.1.5	NA	NA
	3(a), 4(a), 5(a)	2 trains	C,V	SR 3.3.1.5	NA	NA

- (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.
- (a) With Rod Control System capable of rod withdrawal, or one or more rods not fully inserted.
- (d) Below the P-6 (Intermediate Range Neutron Flux) interlock.
- (i) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB
- (j) Below the P-6 (Intermediate Range Neutron Flux) interlock for the logic inputs from Source Range Neutron Flux detector channels.

Not used.

9.34

ESFAS INSTRUMENTATION
3.3.2

Table 3.3.2-1 (page 1 of 4)

Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT (1)
1. Safety Injection						
a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.6	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
c. Containment Pressure - High	1,2,3,4	3	E	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≤ 4.45 psig	4 psig
d. Pressurizer Pressure - Low	1,2,3 ^(a)	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≥ 1709.89 psig	1715 psig
e. Steam Line High Differential Pressure Between Steam Header and Steam Lines	1,2,3 ^(a)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≥ 83.76 psig ≤ 116.24 psig	100 psig
f. High Steam Flow in Two Steam Lines	1,2 ^(b) ,3 ^(b)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	(c)	(d)
Coincident with T _{avg} - Low	1,2 ^(b) ,3 ^(b)	1 per loop	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≥ 541.50 °F	543°F
g. High Steam Flow in Two Steam Lines	1,2 ^(b) ,3 ^(b)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	(c)	(d)
Coincident with Steam Line Pressure - Low	1,2 ^(b) ,3 ^(b)	1 per loop	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≥ 1605.05 psig	614 psig

(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.

(a) Above the Pressurizer Pressure interlock.

(b) Above the T_{avg}-Low interlock.

(c) Less than or equal to a function defined as ΔP corresponding to 41.58% full steam flow below 20% load, and ΔP increasing linearly from 41.58% full steam flow at 20% load to 110.5% full steam flow at 100% load, and ΔP corresponding to 110.5% full steam flow above 100% load.

(d) A function defined as ΔP corresponding to 37.25% full steam flow between 0% and 20% load and then a ΔP increasing linearly from 37.25% steam flow at 20% load to 109% full steam flow at 100% load.

HBRSEP Unit No. 2

3.3-25

Amendment No. 196

597.76

United States Nuclear Regulatory Commission
Attachment IV to Serial: RNP-RA/04-0067
6 Pages (including cover page)

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

**REQUEST FOR TECHNICAL SPECIFICATIONS CHANGES
REGARDING REACTOR PROTECTION SYSTEM AND ENGINEERED
SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TABLES**

RETYPE TECHNICAL SPECIFICATIONS PAGES

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

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT (1)
1. Manual Reactor Trip	1,2	2	B	SR 3.3.1.14	NA	NA
	3(a), 4(a), 5(a)	2	C	SR 3.3.1.14	NA	NA
2. Power Range Neutron Flux						
a. High	1,2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.11	≤ 110.93% RTP	108% RTP (2)
b. Low	1(b), 2	4	E	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 26.93% RTP	24% RTP
3. Intermediate Range Neutron Flux	1(b), 2(c)	2	F,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 36.40% RTP	25% RTP
	2(d)	2	H	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 36.40% RTP	25% RTP
4. Source Range Neutron Flux	2(d)	2	I,J	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 1.28 E5 cps	1.0 E5 cps
	3(a), 4(a), 5(a)	2	J,K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	≤ 1.28 E5 cps	1.0 E5 cps
	3(e), 4(e), 5(e)	1	L	SR 3.3.1.1 SR 3.3.1.11	N/A	N/A

(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.
- (2) The Nominal Trip Setpoint is as stated unless reduced as required by one or more of the following requirements: LCO 3.2.1 Required Action A.2.2; LCO 3.2.2 Required Action A.1.2.2; or LCO 3.7.1 Required Action B.2.
 - (a) With Rod Control System capable of rod withdrawal, or one or more rods not fully inserted.
 - (b) Below the P-10 (Power Range Neutron Flux) interlock.
 - (c) Above the P-6 (Intermediate Range Neutron Flux) interlock.
 - (d) Below the P-6 (Intermediate Range Neutron Flux) interlock.
 - (e) With the RTBs open. In this condition, source range Function does not provide reactor trip but does provide indication and alarm.

Table 3.3.1-1 (page 3 of 7)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT (1)
9. Reactor Coolant Flow - Low						
a. Single Loop	1(g)	3 per loop	N	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 93.45%	94.26%
b. Two Loops	1(h)	3 per loop	M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 93.45%	94.26%
10. Reactor Coolant Pump (RCP) Breaker Position						
a. Single Loop	1(g)	1 per RCP	O	SR 3.3.1.14	NA	NA
b. Two Loops	1(h)	1 per RCP	M	SR 3.3.1.14	NA	NA
11. Undervoltage RCPs	1(f)	1 per bus	M	SR 3.3.1.9 SR 3.3.1.10	≥ 2959 V	3120 V
12. Underfrequency RCPs	1(f)	1 per bus	M	SR 3.3.1.10 SR 3.3.1.14	≥ 57.84 Hz	58.2 Hz
13. Steam Generator (SG) Water Level - Low Low	1.2	3 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 15.36%	16%

(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-7 (Low Power Reactor Trips Block) interlock.
- (g) Above the P-8 (Power Range Neutron Flux) interlock.
- (h) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock.

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	$\geq 29.36\%$	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	$\leq 7.01 \text{ E5}$ 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-7 (Low Power Reactor Trips Block) interlock.

RPS Instrumentation
3.3.1

Table 3.3.1-1 (page 5 of 7)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT (1)
17. Reactor Protection System Interlocks						
a. Intermediate Range Neutron Flux, P-6	2(d)	2	S	SR 3.3.1.11 SR 3.3.1.13	≥ 9.34 E-11 amp	1 E-10 amp
b. Low Power Reactor Trips Block, P-7	1	1 per train	T	SR 3.3.1.13 SR 3.3.1.14	NA	NA
c. Power Range Neutron Flux, P-8	1	4	T	SR 3.3.1.11 SR 3.3.1.13	$\leq 42.94\%$ RTP	40% RTP
d. Power Range Neutron Flux, P-10	1,2	4	S	SR 3.3.1.11 SR 3.3.1.13	$\geq 7.06\%$ RTP and \leq 12.94% RTP	10% RTP
e. Turbine Impulse Pressure, P-7 input	1	2	T	SR 3.3.1.1 SR 3.3.1.10 SR 3.3.1.13	$\leq 10.71\%$ turbine power	10% turbine power
18. Reactor Trip Breakers(i)	1,2	2 trains	R,V	SR 3.3.1.4	NA	NA
	3(a), 4(a), 5(a)	2 trains	C,V	SR 3.3.1.4	NA	NA
19. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1,2	1 each per RTB	U	SR 3.3.1.4	NA	NA
	3(a), 4(a), 5(a)	1 each per RTB	C	SR 3.3.1.4	NA	NA
20. Automatic Trip Logic	1, 2	2 trains	Q,V	SR 3.3.1.5	NA	NA
	3(a), 4(a), 5(a)	2 trains	C,V	SR 3.3.1.5	NA	NA

- (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.
- (a) With Rod Control System capable of rod withdrawal, or one or more rods not fully inserted.
- (d) Below the P-6 (Intermediate Range Neutron Flux) interlock.
- (i) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.
- (j) Not used.

Table 3.3.2-1 (page 1 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED ACTIONS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT (1)
1. Safety Injection						
a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.6	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
c. Containment Pressure - High	1,2,3,4	3	E	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≤ 4.45 psig	4 psig
d. Pressurizer Pressure - Low	1,2,3(a)	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≥ 1709.89 psig	1715 psig
e. Steam Line High Differential Pressure Between Steam Header and Steam Lines	1,2,3(a)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≥ 83.76 psig ≤ 116.24 psig	100 psig
f. High Steam Flow in Two Steam Lines	1,2(b),3(b)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	(c)	(d)
Coincident with T _{avg} - Low	1,2(b),3(b)	1 per loop	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≥ 541.50 °F	543°F
g. High Steam Flow in Two Steam Lines	1,2(b),3(b)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	(c)	(d)
Coincident with Steam Line Pressure - Low	1,2(b),3(b)	1 per loop	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≥ 597.76 psig	614 psig

(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.
- (a) Above the Pressurizer Pressure interlock.
- (b) Above the T_{avg} - Low interlock.
- (c) Less than or equal to a function defined as ΔP corresponding to 41.58% full steam flow below 20% load, and ΔP increasing linearly from 41.58% full steam flow at 20% load to 110.5% full steam flow at 100% load, and ΔP corresponding to 110.5% full steam flow above 100% load.
- (d) A function defined as ΔP corresponding to 37.25% full steam flow between 0% and 20% load and then a ΔP increasing linearly from 37.25% steam flow at 20% load to 109% full steam flow at 100% load.

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

**REQUEST FOR TECHNICAL SPECIFICATIONS CHANGES
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SUPPORTING CALCULATIONS

RNP-I/INST-1135, "Nuclear Instrumentation Intermediate Range Error Analysis"

RNP-I/INST-1128, "RCS Flow Instrument Uncertainty and Scaling Calculation"

RNP-I/INST-1041, "Feedwater Flow Loop Uncertainty and Scaling Calculation"

RNP-I/INST-1043, "Main Steam Pressure Uncertainty and Scaling Calculation"