Progress Energy

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United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

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

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
REGARDING PROPOSED TECHNICAL SPECIFICATIONS CHANGES TO SECTION 3.3

Ladies and Gentlemen:

In a letter dated August 20, 2004, Carolina Power and Light Company, also known as Progress Energy Carolinas, Inc. (PEC), requested NRC review and approval of changes to the Allowable Values for several instrumentation system functions listed in Technical Specifications Section 3.3 for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. The HBRSEP, Unit No. 2, response to an NRC request for additional information (RAI) was provided by letter dated June 22, 2005. In an electronic mail transmission dated May 15, 2006, the NRC provided an additional RAI related to the proposed Technical Specifications submittal. Attachment II provides the response to the RAI.

Attachment I provides an Affirmation in accordance with the provisions of Section 182a of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f).

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

Sincerely,

Jan Lucas

Jan F. Lucas
Manager – Support Services – Nuclear

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

A001

JFL/cac

Attachments: I. Affirmation
II. Response to NRC Request for Additional Information Regarding Proposed Technical Specifications Changes to Section 3.3

c: Dr. W. D. Travers, NRC, Region II
Mr. C. P. Patel, NRC, NRR
NRC Resident Inspector

AFFIRMATION

The information contained in letter RNP-RA/06-0008 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, also known as Progress Energy Carolinas, Inc. I declare under penalty of perjury that the foregoing is true and correct.

Executed On: 6/23/06

T. D. Walt
Vice President
H. B. Robinson Steam Electric Plant, Unit No. 2

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

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION REGARDING PROPOSED TECHNICAL SPECIFICATIONS CHANGES TO SECTION 3.3

The following responses are provided for the NRC requests for additional information (RAI) that were identified in an electronic mail transmission dated May 15, 2006:

NRC Request 1:

The licensee has indicated that the as-found setpoint is to be assessed against the nominal setpoint (the "target value") rather than against the previous as-left setpoint. The staff maintains that the purpose of this assessment is to evaluate the behavior of the instrument(s) as compared with the assumptions upon which the limiting setpoint was based. Assessment against the nominal value rather than against the as-left value would introduce the setting error into the assessment, and could thereby mask excessive deviation. Staff has recently determined that assessment against the nominal setpoint will yield sufficiently sensitive detection of excessive deviation if the setting tolerance (the limiting acceptable as-left deviation from the nominal value) does not exceed the limiting amount of deviation expected (exclusive of the setting tolerance) AND the setting tolerance is incorporated independently into the total loop uncertainty upon which the limiting setpoint is based. If the licensee wishes to retain assessment against the nominal setpoint, then it must be shown that the setting tolerance is suitably constrained.

Response:

It has been determined that the preferred approach for HBRSEP, Unit No. 2, is based on justification that the setting tolerance is suitably constrained. The following information is provided in response to the issue posed in this request and in support of that preferred approach:

The channel calibration and channel operational test procedures for these instruments specify that the "as-found" channel measurements are to be compared to a tolerance range provided in the applicable procedures. The channel operational tests and setpoint calculations for each of the instruments associated with the functions affected by this Technical Specifications (TS) change were reviewed to verify that the as-found tolerance in the applicable channel operational test (COT) procedure is equivalent (or conservative) to the setting tolerance used in the calculation, and to verify that the setting tolerance is included in the calculation of total loop uncertainty (TLU). The following table summarizes the results of this review:

Function	Setting Tolerance (Calculation)	As-Found Tolerance (Test Procedure)	Verified Setting Tolerance Included in TLU and Calculation Number
Table 3.3.1-1, Function 3, Intermediate Range Neutron Flux	0.25% Span	0.25% Span	Yes RNP-I/INST-1135

Function	Setting Tolerance (Calculation)	As-Found Tolerance (Test Procedure)	Verified Setting Tolerance Included in TLU and Calculation Number
Table 3.3.1-1, Functions 9a and 9b, Reactor Coolant Flow – Low, Single and Two Loops	0.50% Span	0.5% Span	Yes RNP-I/INST-1128
Table 3.3.1-1, Function 14, Steam Generator (SG) Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch	0.50% Span	0.5% Span	Yes RNP-I/INST-1041
Table 3.3.1-1, Function 17a, Reactor Protection System Interlocks, Intermediate Range Neutron Flux, P-6	0.25% Span	0.25% Span	Yes RNP-I/INST-1135
Table 3.3.2-1, Function 1g, Safety Injection, High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure Low	0.50% Span	0.5% Span	Yes RNP-I/INST-1043

As demonstrated in the preceding table, the setting tolerance used in each setpoint calculation is consistent with the as-found tolerance used in the test procedure and the setting tolerance is included in the calculation of TLU as a random component of error. Additionally, (as previously stated in the request for additional information response dated June 22, 2005) the channel calibration and channel operational test procedures require problem identification as follows, "If any component is found out of tolerance or incapable of performing its function, suspend the test and notify the Superintendent Shift Operations and I&C (Instrument and Control) Supervisor promptly to assess possible LCO (limiting condition for operation) conditions (ITS LCO 3.3.2) and other operational considerations."

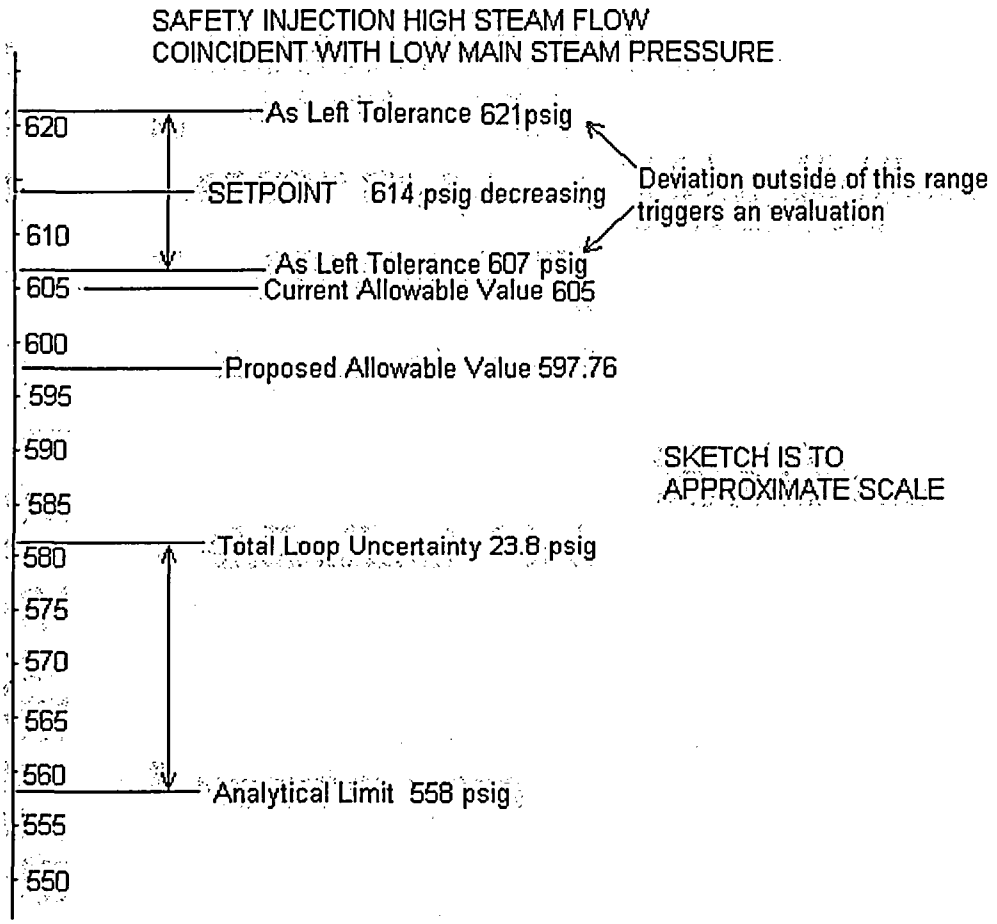
The NRC request states, "Staff has recently determined that assessment against the nominal setpoint will yield sufficiently sensitive detection of excessive deviation if the setting tolerance (the limiting acceptable as-left deviation from the nominal value) does not exceed the limiting amount of deviation expected (exclusive of the setting tolerance) AND the setting tolerance is incorporated independently into the total loop uncertainty upon which the limiting setpoint is based."

The use of the as-left tolerance for as-found functionality assessment for the functions described in the proposed license amendment request provides one method of identifying unexpected or excessive channel deviation. Therefore, it is proposed that the setting tolerance is suitably constrained by the use of this practice.

The NRC request postulates that the comparison of as-found values to previous as-left values provides another method of detecting unexpected channel behavior that could be indicative of channel degradation. While the comparison of two measured values in this manner provides a

means of determining channel behavior, the comparison of two measured values is considered to be more appropriately utilized in trending and for further evaluation of channel behavior, and not necessarily as a required parameter for directly determining channel operability. Channel calibration and channel operational testing is the verification of channel operability in accordance with Technical Specifications requirements and utilizing prescribed methods. Utilizing the direct comparison of two measured values in the manner described within the RAI is not in accordance with the current design and licensing basis for setpoint determination for HBRSEP, Unit No. 2, and therefore adopting this provision would complicate implementation of this TS change. Additionally, as shown in the response to NRC Request 2 (below), the applicable acceptance criteria for the comparison of as-found to previous as-left values would be less restrictive (larger acceptable range) than the current practice of using the as-left tolerance and the nominal trip setpoint.

The following figure and description is provided as an illustration of channel parameters:



The as-found tolerance range as shown in this figure (which, as previously described, is chosen to be the same as the as-left tolerance range) is approximately ±7 psig of the nominal trip setpoint of 614 psig. There is substantial margin to the analytic limit for this function, which is 558 psig (i.e., approximately 56 psig below the nominal trip setpoint).

Therefore, based on the preceding information it is proposed that the setting tolerances for the listed functions are suitably constrained.

NRC Request 2:

The licensee has indicated that the acceptance band used in the assessment of the as-found setpoint includes an allowance for the setting tolerance. This is not consistent with the objective of the as-found assessment as described above. The staff analysis upon which the acceptability of assessment against the nominal setpoint is based presumes that the setting tolerance is excluded from the acceptance band. If the assessment is against the previous as-left setpoint, then the setting tolerance is irrelevant to the assessment and must be omitted from the acceptance criteria.

Response:

As indicated in response to NRC Request 1, the use of the as-left tolerance for the as-found acceptance criteria for the channel testing is proposed as a manner in which the channel would be considered suitable constrained. The use of the as-left tolerance as the as-found tolerance is an appropriate method for detecting unexpected or excessive channel deviation.

Procedure MMM-006, "Calibration Program," states that when an instrument is found to be outside the as-found acceptance criteria, a technical reviewer is required to evaluate the channel, as follows:

1. Evaluate to determine if the instrument's tolerances should be revised based on the type of instrument, its function, and its calibration history.
2. Evaluate the impact of the out of tolerance instrument on the system.
3. Determine if the out of tolerance condition constitutes a repeat failure.
4. Determine if the instrument is defective.
5. Determine if the out of tolerance condition is reportable.

Additionally, the calibration tolerance/setting tolerance is ±0.5% for the Hagan™ module rack-mounted instruments and ±0.25% for Westinghouse Intermediate Range bistable relays. The acceptance criteria for an as-found/as-left comparison proposed by the NRC would be comprised of two components, drift and test equipment uncertainties. As shown in the following table, these two uncertainties, when combined, would yield a greater tolerance value than the current as-found tolerance for these functions.

Function	As-Found Tolerance	Drift	Test Equipment
Table 3.3.1-1, Function 3, Intermediate Range Neutron Flux	0.25% Span	0.25% Span	0.1% Span
Table 3.3.1-1, Functions 9a and 9b, Reactor Coolant Flow – Low, Single and Two Loops	0.5% Span	1.0% Span	0.5% Span

Function	As-Found Tolerance	Drift	Test Equipment
Table 3.3.1-1, Function 14, SG Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch	0.5% Span	1.0% Span	0.31% Span
Table 3.3.1-1, Function 17a, Reactor Protection System Interlocks, Intermediate Range Neutron Flux, P-6	0.25% Span	0.25% Span	0.1% Span
Table 3.3.2-1, Function 1g, Safety Injection, High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure Low	0.5% Span	1.0% Span	0.31% Span

Therefore, the use of the as-left tolerance as an as-found acceptance criterion is considered more appropriate and conservative than the use of instrument drift and test equipment uncertainty for determining acceptability of an as-found to previous as-left comparison.

NRC Request 3:

The response to RAI6 [Request Number 6 from the June 22, 2005, RAI response] seems to indicate that the full value of the setting tolerance is not always included in the computation of total loop uncertainty. Since the error associated with setting tolerance is independent of all other errors, it is not clear to us why this should be considered acceptable. The calculations should be revised accordingly or shown to be sufficiently conservative.

Response:

Procedure EGR-NGGC-0153, "Engineering Instrument Setpoints," Section 9.7.4, "Uncertainty Allowances," predominantly uses the terms "as-left tolerance," "setting tolerance," or "calibration tolerance," for the allowance provided for the instrument technician in recognition of the fact that it is not practical to set an adjustment exactly equal to some specific number. Section 9.8.2.3, "Setpoint Tolerances," of procedure EGR-NGGC-0153 (pages 161 and 162) describes the effects of calibration tolerance on the total loop uncertainty.

The discussion on page 139 of procedure EGR-NGGC-0153, Section 9.7.4, is intended to point out that for limiting safety system settings (LSSS) the calibration tolerance is normally selected equal to the reference accuracy. The reference accuracy is included in the overall uncertainty calculation. Additionally, setting tolerance, above and beyond the reference accuracy, is sometimes added for primary sensor calibrations. Consequently, in those cases, the additional setting tolerances need to be factored into the uncertainty calculations.

The reference accuracy and the calibration tolerance are both included in the uncertainty calculations. For example, Calculation RNP-I/INST-1135 (pages 14-16) shows the setting

tolerance (designated CAL_{BIS}) and the reference accuracy (designated RA_{BIS}) are both included in the calculation of uncertainty for the Intermediate Range nuclear instruments.

The full value of the setting tolerance (also referred to as "calibration tolerance") and the reference accuracy are included in the determination of the instrument device uncertainty and the instrument loop uncertainty. "Setting tolerance," in this context, refers to an additional error that is dependent on the device under evaluation and, as described in that procedure, should be included as determined to be appropriate.

For example, the main steam pressure bistable relay is calibrated using the test equipment found in the calibration lab. The use of controlled test equipment introduces an error so small it is considered negligible, and hence it is not included in the calibration tolerance. Therefore, the calibration tolerance is based upon the "reference accuracy" of the bistable.

As another example, the Nuclear Instrument System (NIS) can be adjusted as necessary in accordance with the operational surveillance test procedures. These procedures use the meters on the front of the NIS panel to make the adjustments, which have a larger measurement error than the equipment used for calibration and channel operational testing, and hence introduce an additional uncertainty. This additional uncertainty is included in the setting tolerance and is reflected in the acceptance criteria for this testing. The response to RAI6 from the June 22, 2005, letter was intended to be inclusive of a wide range of measurement considerations and was not intended to imply that the appropriate uncertainties were not considered.