Progress Energy

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United States Nuclear Regulatory Commission
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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

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, Progress Energy Carolinas, Inc. (PEC), also known as Carolina Power and Light Company, 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. In a facsimile transmission dated December 9, 2004, the NRC provided PEC with a request for additional information (RAI) related to the proposed Technical Specifications submittal. This RAI includes requests specific to HBRSEP, Unit No. 2, and generic requests related to Instrumentation, Systems, and Automation Society (ISA) Standard S67-04, Method 3. A subsequent transmittal of an NRC letter dated March 31, 2005, from Mr. James A. Lyons, Deputy Director, Division of Licensing Project Management, Office of Nuclear Reactor Regulation, to Mr. Alex Marion, Senior Director of Engineering, Nuclear Energy Institute, included an enclosure titled, "Revised Method 3 Request for Additional Information." Attachment II provides the required response to the RAI, including response to the March 31, 2005, revised Method 3 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,

Rosemary Westbrook for Jan F. Lucas

Jan F. Lucas
Manager – Support Services – Nuclear

Progress Energy Carolinas, Inc.
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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/05-0048 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: 22 June 2005

J. W. Moyer
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 that were identified in the facsimile transmission dated December 9, 2004:

NRC Request

1. The revision level for each of the documents in Attachments V and VI to the referenced letter is not specified in the letter. The following documents were included in the submittal package, and will be used in our review. Please confirm that these are as intended:

Document Number	Revision
a) RNP-I/INST-1135	1
b) RNP-I/INST-1128	5
c) RNP-I/INST-1041	3
d) RNP-I/INST-1043	5
e) EGR-NGGC-0153	10

Response

The documents and revision numbers identified are correct.

NRC Request

2. Allowable Values based upon ISA 67.04.02 Method 3 do not provide enough offset from the associated Analytical Limits to accommodate uncertainties remaining following channel testing. The Licensee's approach to the application of Method 3-based Allowable Values and Nominal Trip Setpoints in the proposed Technical Specifications mitigates some but not all of the staff's concerns in this area. Please respond to the attached "Interim RAI for Current License Amendment Requests" to demonstrate the acceptability of the proposed TS or to modify the request as appropriate.

Response

This request has been superseded by the request provided as the enclosure to NRC letter dated March 31, 2005, from Mr. James A. Lyons, Deputy Director, Division of Licensing Project Management, Office of Nuclear Reactor Regulation, to Mr. Alex Marion, Senior Director of Engineering, Nuclear Energy Institute. Response to this RAI is provided later in this attachment.

NRC Request

3. The reasons for the requested changes are not presented in the licensee's change request. Please describe the reason for requesting each of these changes. In cases where the requested TS are more restrictive than the existing TS, please show that the Safety Limits have been adequately protected by the existing limits. Also please confirm that this need for increased conservatism does not apply to any of the existing TS that are not addressed among the requested changes, and show the reasoning behind that conclusion.

Response

The proposed Technical Specifications (TS) changes were requested due to revisions in the identified calculations. These revisions resulted in changes to TS Allowable Values (AV) for the affected functions. In general, the revision description provided in each calculation provides details pertaining to the revisions. The TS change request letter dated August 20, 2004, proposes changes to the Allowable Values for the affected Reactor Protection System (RPS) and Engineered Safety Feature (ESF) actuation functions. There are no proposed changes to the Nominal Trip Setpoints. Additionally, the analytical limit for each of the functions, as based on the applicable safety analyses and evaluations, remain unchanged. Therefore, the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, Safety Limits remain protected.

The following table provides a summary of the proposed changes:

Function	Current AV	Proposed AV	Percent Change	Nominal Trip Setpoint
Table 3.3.1-1, Function 3, Intermediate Range Neutron Flux	≤ 37.02 %Power	≤ 36.40 More Restrictive	1.67%	25
Table 3.3.1-1, Functions 9a and 9b, Reactor Coolant Flow – Low, Single and Two Loops	≥ 93.47 %Flow	≥ 93.45 Less Restrictive	0.02%	94.26
Table 3.3.1-1, Function 14, SG Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch	≤ 7.06E5 lbm/hr	≤ 7.01E5 More Restrictive	0.71%	6.4E5
Table 3.3.1-1, Function 17a, Reactor Protection System Interlocks, Intermediate Range Neutron Flux, P-6	≥ 7.29E-11 amp	≥ 9.34E-11 More Restrictive	28.1%	1E-10
Table 3.3.2-1, Function 1g, Safety Injection, High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure Low	≥ 605.05 psig	≥ 597.76 Less Restrictive	1.2%	614

Typically, during channel calibration and channel operational test of the instruments, the "as-found" channel measurements are compared to a tolerance range provided in the applicable procedure. This tolerance range is obtained by applying the instrument calibration tolerance to the results of a data point and verifying that the results obtained are within the required tolerance. The calibration tolerance is obtained from the manufacturer of the instrument and does not include the accuracy of the test equipment utilized in the testing or any instrument drift over time and is typically more restrictive than the Allowable Value, which is conservative. 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 TS Allowable Value would be used in the determination of channel operability, although the discovery of a channel outside the Allowable Value is extremely infrequent. Most TS functions would normally be considered operable in the condition where only one channel is outside the Allowable Value range, because most TS instrument functions have sufficient redundancy to provide actuation of the required protection function with the failure of one channel.

The revisions to the submitted Technical Specifications were a result of review and revision to the uncertainty and scaling calculations from which the setpoints and Allowable Values were determined. Only those Allowable Values that changed as a result of these calculation revisions were submitted as part of the change to Technical Specifications. The changes are based on the review and revision process and are not based on the discovery of some issue that results in a general need for increased conservatism. Therefore, no other existing TS functions are affected.

Three of the proposed changes are considered "more restrictive." Additional information pertaining to these functions is provided as follows:

Table 3.3.1-1, Function 3, Intermediate Range Neutron Flux

The Allowable Value for this function is being changed from ≤ 37.02% to ≤ 36.40% rated thermal power. As stated previously, this change is requested based on revision to the identified calculation. Further, the nominal trip setpoint of 25% power is not being changed. This protection function is provided as a secondary means of terminating an uncontrolled power increase transient initiated from relatively low power conditions. As stated in the HBRSEP, Unit No. 2, Updated Final Safety Analysis Report (UFSAR), Section 15.4.1, "Uncontrolled Rod Cluster Control Assembly Bank Withdrawal from Subcritical or Low Power," the primary protection function is provided by TS Table 3.3.1, Function 2.b, Power Range Neutron Flux – Low, which is assumed to occur at 35% of 2300 MWt. Therefore, the proposed change and existing Allowable Value limits for the Intermediate Range Neutron Flux protection function have no direct affect on existing Safety Limits.

Table 3.3.1-1, Function 14, SG Water Level –
Low Coincident with Steam Flow/Feedwater Flow Mismatch

The Allowable Value for this function is being changed from ≤ 7.06E5 to ≤ 7.01E5 lbm/hr. As stated previously, this change is requested based on revision to the identified calculation.

Further, the nominal trip setpoint of 6.4E5 lbm/hr is not being changed. The TS Bases for Limiting Condition for Operation (LCO) 3.3.1 states that the SG Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch protection function provides diverse protection for loss of heat sink. As stated in the UFSAR, Section 15.2.7, "Loss of Normal Feedwater," the primary protection for loss of heat sink is provided by TS Table 3.3.1, Function 13, SG Water Level – Low-Low, which is assumed to occur at 0% level. Therefore, the proposed change and existing Allowable Value limit for the SG Water Level – Low Coincident with Steam Flow/Feedwater Flow Mismatch protection function have no direct affect on existing Safety Limits.

Table 3.3.1-1, Function 17a, Reactor Protection
System Interlocks, Intermediate Range Neutron Flux, P-6

The Allowable Value for this function is being changed from ≥ 7.29E-11 to ≥ 9.34E-11 amp. As stated previously, this change is requested based on revision to the identified calculation. Further, the nominal trip setpoint of 1E-10 amp is not being changed. The TS Bases for LCO 3.3.1 states that the Intermediate Range Neutron Flux P-6 interlock is actuated when any Nuclear Instrumentation System (NIS) intermediate range channel goes approximately one decade above the minimum channel reading. If both channels drop below the setpoint, the permissive will automatically be defeated. The LCO requirement for the P-6 interlock ensures the following functions are performed:

- On increasing power, the P-6 interlock allows the manual block of the NIS Source Range Neutron Flux reactor trip. This prevents a premature block of the source range trip and allows the operator to ensure that the intermediate range is OPERABLE prior to leaving the source range. When the source range trip is blocked, the high voltage to the detectors is also removed; and

- on decreasing power, the P-6 interlock automatically energizes the NIS source range detectors and enables the NIS Source Range Neutron Flux reactor trip.

As stated in the preceding TS Bases information, the P-6 setting is "approximately one decade above the minimum channel reading." The current TS nominal trip setpoint of 1E-10 amp is one decade above 1E-11 amp, which is the minimum NIS intermediate range scale.

The Intermediate Range Neutron Flux P-6 interlock does not provide direct protection of any safety limits. The automatically initiated action of unblocking NIS source range is consistent with the description of the Fission Process Monitors and Controls, as described in HBRSEP, Unit No. 2, UFSAR Section 3.1.2.13. The UFSAR states, "As the reactor power increases, the overpower protection level is increased administratively after satisfactory higher range instrumentation operation is obtained. Automatic reset to more restrictive trip protection is provided when reducing power." It should be further noted that the TS Section 3.3.1 LCO requirements for the NIS trip functions and permissives establish the appropriate operability requirements and required actions for inoperability of these functions.

Therefore, the proposed change and existing Allowable Value for Intermediate Range Neutron Flux P-6 interlock protection function have no direct affect on existing Safety Limits.

NRC Request

The following comments and questions refer to the Methodology Document, EGR-NGGC-0153, revision 10:

4. page 25: Please confirm that the methodology is indeed applicable to the Allowable Values in question, or summarize the differences between what is presented here and what was used in the derivation of the proposed TS changes. Also, please describe any alternative methods, applications of "engineering judgement," etc. that are used in the derivation of the proposed TS but are not explicitly described in the methodology document.

Response

EGR-NGGC-0153 setpoint methodology is applicable to the Allowable Value changes submitted. The calculations determining the changes in the TS values were performed using the guidance, direction, and methodology of procedure EGR-NGGC-0153. No alternate methods or applications of "engineering judgment" were used in determining the input to the TS changes. The methodology described in procedure EGR-NGGC-0153 was used to revise the subject calculations upon which the requested Allowable Value changes are based.

NRC Request

5. p 129 re "graded approach" - Please describe the sorts of simplifications to be applied in a "graded approach" and confirm that the implementation of a "graded approach" will *always* produce a result that is no less conservative than what would have been produced if the methodology had been applied without consideration of grading.

Response

The scope of EGR-NGGC-0153 extends beyond those instruments that specifically support Limiting Safety System Settings (LSSS). Therefore, a "graded approach" is the method utilized to ensure that the appropriate level of rigor is applied to calculations commensurate with the safety significance of the instrument and parameter being evaluated. Less rigorous treatment is limited to setpoints that are based on utility, industry and/or vendor experience, consistent with engineering judgment.

Reduced treatment using the graded approach does not apply to setpoints explicitly credited in plant accident analyses. The instrument Allowable Values and Trip Setpoints stated in the HBRSEP, Unit No. 2, Technical Specifications are not eligible for application of the graded approach and no such approach was utilized in determining the proposed Allowable Values.

NRC Request

6. p 139 re "device setting tolerance (ST):" This term usually applies to an allowance provided for the instrument technician in recognition of the fact that it is impossible to set an adjustment exactly equal to some specific number. The ST establishes an acceptance band

about the nominal value. It is not related directly to reference accuracy, and it can never be zero because no adjustment can realistically be exact. The paragraph near the top of this page seems to indicate that the setting tolerance is to be ignored in uncertainty calculations. It also appears that "Setting Tolerance" may be confused with uncertainty or error in that discussion. Please clarify.

Response

The procedure EGR-NGGC-0153, "Engineering Instrument Setpoints," 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 of this procedure (pages 161 and 162) states the effects of calibration tolerance on the total loop uncertainty.

The discussion on page 139 is intended to point out that for LSSS-related settings 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.

NRC Request

7. p 141 re "twice the tolerance:" The caveats regarding potential misapplication of the "twice the tolerance" criterion for evaluating As-Found setpoints seems appropriate, but [it] seems that the procedures might not be consistent with the Technical Specifications if such a criterion is needed. The TS must include confirmation that an instrument channel is operable, and evaluation of the As-Found setpoint would seem an important consideration in that confirmation.

Response

The "twice the tolerance" concept is not applicable to HBRSEP, Unit No. 2. It was not used in determining the setpoint tolerance of any TS changes submitted. The subject is included in EGR-NGGC-0153 to address a method used at another Progress Energy facility, where "twice the tolerance" as-found results are one threshold for entering the Corrective Action Program process. The procedure includes cautions to prevent "twice the tolerance" limits from exceeding the Allowable Value. This conservative practice results in instrument performance evaluations based on criteria more restrictive than the Allowable Value.

NRC Request

8. p 142: The discussion of AV on this page and in other places appears to utilize a different definition of "Allowable Value" from what is presented in the Technical Specifications. Here it is presented as a deviation limit, but in the TS it is presented as an explicit limit on the As-Found setpoint.

Response

The definition on page 7 of the procedure states that the Allowable Value is a limiting value that the trip setpoint may have when tested periodically, beyond which appropriate action shall be taken. Within the methodology, the Allowable Value is an explicit limit on As-Found surveillance test values. The AV is established based on the deviation limit calculated for the portion of the loop tested by a specific surveillance. Additionally, the "twice the tolerance" method described on page 142 is used by a different Progress Energy facility and is not applicable to HBRSEP, Unit No. 2.

NRC Request

9. p 144 re final paragraph of the "RNP" note: Determination of operability in terms of conformance to the Tech Spec limits must never be "subjective." Evaluation of performance relative to Technical Specifications must always be clear and unambiguous. Please confirm that this paragraph does not apply to procedures related to setpoints for which the Technical Specifications specify limits, and that those procedures are controlled in a manner so as to ensure that the Technical Specifications will always be met.

Response

The characterization of the evaluation of out of tolerance conditions as "rather subjective" was not intended to imply that an operability evaluation be subjective. However, this procedure wording could be made clearer. It is expected that this description will be changed in the next revision of this procedure. The actual process by which TS instruments are managed is more rigorous than what appears to be implied by procedure EGR-NGGC-0153. The calibration and channel operability test procedures specify the tolerances to which the calibration data results are to be compared. Channel operability test and calibration procedures typically only state one tolerance. This tolerance applies to both the As-Found and As-Left values. The use of the single tolerance is a restrictive and conservative practice for the initial determination of operability for RPS and ESF components. Within the surveillance test procedures, As-Found values that are outside of the single tolerance limit are promptly evaluated, as required in the applicable procedures. An example of this from HBRSEP, Unit No. 2, procedure MST-014, "Steam Generator Pressure Protection Channel Testing," which states, "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 Supervisor promptly to assess possible LCO conditions (ITS LCO 3.3.2) AND other operational considerations."

NRC Request

10. p 152, middle paragraph: An Analytical Limit should be selected by means of some criteria that do not need to be specified here, and must be confirmed by means of the accident analyses to result in safe operation. The setpoint-related Technical Specifications are then established to protect the AL in consideration of the characteristics of the instrument loop and of the monitored process. The AL are a fundamental foundation of the TS, and therefore cannot be derived from them. The suggestion in this paragraph that the setpoint-related Technical Specifications might be based on something other than protection of the AL raises

significant concern over the bases and effectiveness of those Technical Specifications. Please clarify.

Response

If applicable Safety Limits and Analytical Limits exist, the TS Nominal Trip Setpoints and Allowable Values are determined to protect those limits. However, some TS instrument functions exist only as anticipatory or back-up trips that are not specifically credited in the plant accident analyses. The values for these functions are derived from a variety of sources other than the plant accident analyses. Examples include: Turbine Low Oil Pressure, Turbine Valve Position, Reactor Coolant Pump Undervoltage (UV) and Underfrequency (UF) Trips. A "back-up" trip function proposed for change by this License Amendment Request is the Table 3.3.1-1, Function 3, Intermediate Range Neutron Flux trip. Therefore, as previously indicated, there is no Analytic Limit for this function.

NRC Request

11. p 153: The example omits consideration of uncertainties, and so does not demonstrate the adequacy of the indicated nominal setpoint and Allowable Value. For example, if the post-COT [channel operability test] uncertainty were 50 psig, then the actual trip value given an AV of 2399 psig would be 2449 psig [corrected from 1449 psig]. This would be in excess of the 2445 psig Analytical Limit, and therefore protection of the associated safety limit would not be adequately ensured. If performance-based TS were used and the total loop uncertainty were 65 psig, then the 2385 psig nominal setpoint could result in an actual trippoint of 2450 psig, again in excess of the 2445 psig AL.

Response

The example presented on page 153 is provided in the broader context of procedure Section 9.8.1, "Limits." It is intended as a simple example to illustrate the relationship between Trip Setpoint, Allowable Value, Analytic Limit, and Safety Limit. The example is not intended to provide detailed explanation of the specific total loop uncertainties involved.

NRC Request

12. p 154 re "Channel Operability Limit:" This discussion includes various points which warrant comments or questions from staff. Please respond to or clarify each of the following:

    a. It is true that not only the COL but many other considerations not directly addressed in the TS could render a channel inoperable. It is the responsibility of the licensee to ensure the operability of the channel in all respects whether directly addressed in the TS or not.

Response

The setpoint-related "Channel Operability Limit" is the main point of procedure Section 9.8.1, subsection 4. The information provided in this section was not intended to include or exclude other factors that can affect channel operability.

NRC Request

b. The COL is presented not as a means for ensuring operability but rather as a potential justification for declaring an AV violation to be non-reportable. This is contrary to the proposed TS. The proposed TS do not offer any means by which a violation of the AV could be considered non-reportable. This discrepancy could result in confusion and errors on the part of personnel responsible for the operation and maintenance of the associated instrument loops.

Response

Section 9.8.1.4, "Channel Operability Limit," page 155, addresses the scenario where a TS Allowable Value, which is defined only for that subset of a loop subjected to a particular surveillance test (typically a channel operational test [COT]), is exceeded. Please note that this section of the procedure also states that corrective actions must be in accordance with the Technical Specifications when the Allowable Value is exceeded, regardless of whether or not the channel operability limit was exceeded. The failed portion of the loop under test must be restored such that the channel operates within the required tolerance of the nominal trip setpoint prior to being restored to operable status.

The information in this section of the procedure pertaining to reportability is intended to address the safety significance of the channel test failure. In that context, it is intended that this information would provide direction for evaluation regarding past operability of the channel and reportability of the test failure.

If a channel is found to be outside of operability limits, a Nuclear Condition Report would be generated. The Nuclear Condition Report process includes further operability and reportability reviews by Operations and Licensing personnel. The reportability determination is made using guidance contained in a specific reporting requirements procedure and NUREG-1022, as necessary.

Furthermore, the personnel responsible for operating and maintaining the instrumentation systems do not use procedure EGR-NGGC-0153. This procedure is intended as guidance for setpoint calculation and determination, which is used by the engineers and technical persons that perform such analyses. The persons responsible for operating and maintaining the instrumentation systems use the plant-specific operating and maintenance procedures. A previously provided example of guidance in the plant-specific procedures was provided as follows:

> 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 Supervisor promptly to assess possible LCO conditions (ITS LCO 3.3.2) and other operational considerations."

Therefore, it is considered unlikely that the information in EGR-NGGC-0153 would result in confusion and errors on the part of personnel responsible for the operation and maintenance of the associated instrument loops. As stated, the EGR-NGGC-0153 guidance is intended to be used by engineers and analysts to aid in determining the factors that should be considered when reviewing the safety significance of a channel failure.

NRC Request

c. This COL discussion is consistent with a description of the AV presented elsewhere in this methodology. That description presents the AV as a means for confirming that a channel is operating within the uncertainty limits assumed in the establishment of the limiting setpoint, rather than as a direct indication that the AL is protected. This approach resembles one of the options presented in the attached *Generic RAI*, but is not consistent with the TS as-written.

Response

As quoted in the August 20, 2004 submittal, the HBRSEP, Unit No. 2, TS Bases states:

> "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 submittal letter also states:

> "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."

The description of the "Channel Operability Limit (COL)" in EGR-NGGC-0153, Section 9.8.1.4, clearly states that the COL is not addressed in the Technical Specifications. It also states that an instrument loop whose As-Found setpoint exceeds the Allowable Value in a non-conservative direction must be declared inoperable and corrective actions taken. As previously stated, the COL is intended to provide direction for evaluation regarding past operability of the channel and reportability of the test failure. Therefore, the information pertaining to the COL provided in procedure EGR-NGGC-0153 does not contradict or supplant TS guidance for the determination of operability.

NRC Request

d. The reference to lack of conclusive demonstration that actuation would have occurred at a non-conservative value places the emphasis and presumes the purpose of the TS incorrectly: It is necessary to demonstrate with an adequate degree of confidence that the actuation *will* occur at a *conservative* value. The acceptable condition must be demonstrated; it is not sufficient merely to conclusively demonstrate that some particular unacceptable condition does not exist. This statement could result in confusion and errors on the part of personnel responsible for the operation and maintenance of the associated instrument loops.

Response

EGR-NGGC-0153 is primarily for use by engineers and technical analysts knowledgeable in, and responsible for, technical evaluations related to instrument uncertainty and setpoint calculations. It is not intended for direct use by personnel responsible for operation or maintenance of the associated instrument loops. As such, the discussion regarding "conclusive demonstration" is considered appropriate as guidance to an engineer or technical analyst in the assessment of a loop function when a portion of a loop has exceeded the applicable AV during surveillance. The intent of that discussion is to emphasize the distinction between the overall performance of a channel versus the performance of a limited subset of the channel. In most surveillances, only a portion of the channel is tested by a COT and the TS Allowable Values are calculated based on that subset of the overall loop that is tested during the surveillance. The COT is satisfactory only when the observed setpoint actuation is at a value less than or equal to the AV. Test failures cause the channel being tested to be declared inoperable.

COLs apply to the broader scope of the total channel. Demonstration that COL limits are met is used as input to an evaluation regarding overall functionality of the channel. This evaluation technique is used subsequent to a COT failure by engineers and technical analysts responsible for these types of evaluations. Therefore, it is considered unlikely that the information in EGR-NGGC-0153 would result in confusion and errors on the part of personnel responsible for the operation and maintenance of the associated instrument loops.

As previously indicated, this guidance in EGR-NGGC-0153 is intended to be used in evaluations after the initial discovery of a channel operability concern. The channel operability requirements are clear in the HBRSEP, Unit No. 2, TS. If a channel is found to be inoperable, the appropriate TS actions are implemented at the time of discovery.

NRC Request

As stated in the cover letter, a subsequent transmittal of an NRC letter dated March 31, 2005, from Mr. James A. Lyons, Deputy Director, Division of Licensing Project Management, Office of Nuclear Reactor Regulation, to Mr. Alex Marion, Senior Director of Engineering, Nuclear Energy Institute, provided a revised Method 3 request for additional information. The remainder of the December 9, 2004 request for additional information, is provided for completeness of this correspondence, as follows:

Allowable Value Generic Concern

Interim RAI for Current License Amendment Requests

For Method 3-Based Changes to Setpoint-Related Technical Specifications Only

Staff has determined that setpoint Allowable Values (AV) established by means of ISA 67.04 Part 2 Method 3 do not provide adequate assurance that a plant will operate in accordance with the assumptions upon which the plant safety analyses have been based. These concerns have been described in various public meetings. The presentation used in public meetings in June and July, 2004 to describe the staff concerns is available on the public website under ADAMS Accession Number ML041810346[1].

Staff is currently formulating generic action on this subject. It is presently clear, however, that staff will not be able to accept any requested Technical Specification changes that are based upon the use of Method 3, unless the method is modified to alleviate the staff concerns. In particular, each setpoint limit in the Technical Specifications must ensure at least 95% probability with at least 95% confidence that the associated action will be initiated with the process variable no less conservative than the initiation value assumed in the plant safety analyses. In addition, the operability of each instrument channel addressed in the setpoint-related Technical Specifications must be ensured by the Technical Specifications. That is, conformance to the TS must provide adequate assurance that the plant will operate in accordance with the safety analyses. Reliance on settings or practices outside the TS and not mandated by them is not adequate.

Staff has determined that AV computed in accordance with ISA Method 1 or 2 do provide adequate assurance that the safety analysis limits will not be exceeded. Staff has also determined that an entirely different approach, based upon the performance of an instrument channel rather than directly upon the measured trip setting, can also provide the required assurance. This alternative approach, designated Performance-Based Technical Specifications, sets limits on acceptable nominal setpoints and upon the observed deviation in the measured setpoint from the end of one test to the beginning of the next. This approach has been accepted for use at Ginna, and is discussed in a Safety Evaluation available via ADAMS as Accession Number ML041180293. The referenced Safety Evaluation is specific to Ginna,

[1] Go to www.nrc.gov, click on "Electronic Reading Room," then "Documents in ADAMS," then "Web-Based Access," then "Advanced Search," and enter the Accession number into the Accession Number box near the top of the page. Click on the "Search" button near the bottom of the page. Click on the icon under "Image File" on the search results page. NOTE: You will need Adobe Acrobat Reader to open this file.

and is cited here only as a general example for other plants. It is up to the licensee to modify the approach as necessary to meet the indicated objectives for the particular plant(s) in question. In addition, licensees are welcome to propose alternative approaches that provide the indicated confidence, but such alternative approaches must be presented in detail and must be shown explicitly to provide adequate assurance that the safety analysis assumptions will not be violated.

NEI has indicated an intent to submit a white paper concerning this matter for NRC consideration. Receipt of that white paper is anticipated in late October or early November, 2004. Licensees may choose to endorse whatever approach and justification is described in that white paper, or to act independently of the NEI. If the NEI approach is found to be acceptable to staff, it will be necessary for each licensee who chooses to use it to affirm that the salient conditions, practices, etc. described in it are applicable to their individual situations.

Please indicate how you wish to proceed in regard to the Setpoint-Related Technical Specification changes addressed in your request. Following are some examples of acceptable actions:

- Demonstrate that the approach that you have used to develop the proposed limits provides adequate assurance that the plant will operate in accordance with the safety analyses. Show that Operability is ensured in the Technical Specifications.

- Suspend consideration of setpoint-related aspects of your request pending generic resolution of the staff concern.

- Revise your request to incorporate Method 1, Method 2, or Performance-Based Technical Specifications.

- Revise your request to incorporate some other approach that you demonstrate to provide adequate confidence that the plant will operate in accordance with the safety analyses and show that Operability is ensured in the Technical Specifications.

Based on a telephone discussion with the NRC Project Manager for HBRSEP, Unit No. 2, the following "generic" RAI has been substituted for the "Method 3" RAI provided in the December 9, 2004, facsimile transmission:

REVISED METHOD 3 REQUEST FOR ADDITIONAL INFORMATION

The [insert plant name] technical specifications define Limiting Safety System Settings (LSSS) as an allowable value (AV). During reviews of proposed license amendments that contain changes to LSSS setpoints, the NRC staff identified concerns regarding the method used by some licensees to determine the allowable values (AV) identified in the technical specifications (TS). AVs are identified in the TS as LSSS to provide acceptance criteria for determination of instrument channel operability during periodic surveillance testing. The NRC staff's concern relates to one of the three methods for determining the AV as described in the Instrument Society of America (ISA) recommended practice ISA-RP67.04-1994, Part II, "Methodologies for Determination of Setpoints for Nuclear Safety-Related Instrumentation."

The NRC staff has determined that to ensure a plant will operate in accordance with the assumptions upon which the plant safety analyses have been based, additional information is required regardless of the methodology used to establish LSSS values in technical specifications. Details about the NRC staff's concerns are available on the NRC's public website under ADAMS Accession Numbers ML041690604, ML041810346, and ML050670025.

In Order for the NRC staff to assess the acceptability of your license amendment request related to this issue, the NRC staff requests the following additional information:

1. Discuss the setpoint methodology used at [insert plant name] to establish AVs associated with LSSS setpoints.

2. Regardless of the methodology used, the NRC staff has the following questions regarding the use of the methodology at [insert plant name]:

    a. Discuss how the methodology and controls you have in place ensure that the analytical limit (AL) associated with an LSSS will not be exceeded (the AL is a surrogate that ensures the safety limits will not be exceeded). Include in your discussion information on the controls you employ to ensure the trip setpoint established after completing periodic surveillances satisfies your methodology. If the controls are located in a document other than the TS, discuss how those controls satisfy the requirements of 10 CFR 50.36.

    b. Discuss how the TS surveillances ensure the operability of the instrument channel. This should include a discussion on how the surveillance test results relate to the technical specification AV and describe how these are used to determine the operability of the instrument channel. If the requirements for determining operability of the LSSS instrument being tested are in a document other than the TS (e.g., plant test procedure), discuss how this meets the requirements of 10 CFR 50.36.

RESPONSE TO REVISED METHOD 3 REQUEST FOR ADDITIONAL INFORMATION

Response to NRC Request 1

The setpoint methodology used for HBRSEP, Unit No. 2, is provided in the procedure EGR-NGGC-0153, "Engineering Instrument Setpoints," as further clarified in response to the specific request for additional information provided in the preceding sections of this attachment. A copy of this procedure was submitted to the NRC with the proposed changes to TS Sections 3.3.1 and 3.3.2, by letter dated August 20, 2004.

Response to NRC Request 2a

As quoted in the August 20, 2004 submittal, the HBRSEP, Unit No. 2, TS Bases states:

> "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 submittal letter also states:

> 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.

A control that is employed to ensure the trip setpoint is properly established after completing periodic surveillances is the use of a calibration tolerance band when adjusting the channel to actuate at the nominal trip setpoint. The calibration tolerance band is needed because it is not

practical to require a channel As-Left value to be exactly at the nominal trip setpoint. Therefore, the acceptable range establishes the As-Left setting limit for channel operability.

These controls are established by channel setpoint calculation and maintained in the channel calibration and test procedures. The combination of TS-specified Allowable Values and Nominal Trip Setpoints, and Nominal Trip Setpoint Tolerance, calculated in accordance with the setpoint methodology and maintained in the applicable procedures, establishes controls that satisfy 10 CFR 50.36 requirements based on the following:

- The HBRSEP, Unit No. 2, Technical Specifications define OPERABLE/ OPERABILITY as, "A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s)."

- The setpoint method (referenced in the TS Bases) establishes that channel operability is based on the As-Found value being within the TS-specified Allowable Value and the As-Left value being within the required tolerance of the TS-specified Nominal Trip Setpoint.

- The TS Section 3.3.1 and 3.3.2 requirements include the note on Tables 3.3.1-1 and 3.3.2-1 for the Nominal Trip Setpoint, which states, "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."

- The setpoint method provides the appropriate controls for establishing the tolerance for the Nominal Trip Setpoint As-Left setting limit.

- If a channel does not meet the operability requirements, it must be declared inoperable. The TS-required actions would be applicable at that point.

Therefore, the TS-specified AV and the TS-specified Nominal Trip Setpoint, along with the Nominal Trip Setpoint Tolerance determined in accordance with the setpoint methodology, which is referenced in the TS Bases and stated explicitly by the note associated with the Nominal Trip Setpoint in TS Table 3.3.1-1 and 3.3.2-1, establish controls that satisfy 10 CFR 50.36.

<u>Response to NRC Request 2b</u>

The TS surveillances for instrumentation ensure operability of the instrument channels by the use of Channel Checks, Channel Operational Tests, and Channel Calibrations, conducted at the TS-required frequencies. As previously described in this RAI response, the TS Allowable Value is considered an "As-Found" operability limit during Channel Operational Tests. The requirements

for determining LSSS instrument operability are provided in the TS and meet the requirements of 10 CFR 50.36, as described in the response to NRC Request 2a.