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June 29, 2001
L-01-088

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

Subject: Beaver Valley Power Station, Unit No. 1 and No. 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
Response to Request for Additional Information
In Support of LAR Nos. 286 and 158

This letter provides the Beaver Valley Power Station (BVPS) response to a NRC request for additional information in support of License Amendment Requests (LARs) 286 and 158. These LARs were submitted to the NRC by letter L-00-143 dated December 27, 2000. LARs 286 and 158 revise Reactor Trip System Instrumentation and Engineered Safety Feature Actuation System Instrumentation trip setpoints and allowable values; utilize the Revised Thermal Design Procedure (RTDP) to generate additional Departure from Nucleate Boiling (DNB) margin to allow a revision to the core safety limits, DNB parameters and Overtemperature and Overpower ΔT trip setpoints; relocate certain requirements from the Technical Specifications to either the Core Operating Limits Report (COLR) or Licensing Requirements Manual (LRM); revise the associated Bases sections to reflect the proposed changes; and also include miscellaneous changes to the Technical Specifications and Bases sections.

On April 19, 2001, the NRC staff transmitted draft questions concerning LARs 286 and 158. On June 14, 2001, a meeting was held between NRC, BVPS and Westinghouse personnel for the purpose of discussing and finalizing outstanding questions on LARs 286 and 158. The draft questions that were transmitted on April 19, 2001, were finalized during this June 14, 2001 meeting. These specific questions along with the BVPS response to each question are provided in Attachment A. Attachment B contains revised marked up BVPS Unit No. 1 Technical Specifications pages and Attachment C contains revised marked up BVPS Unit No. 2 Technical Specifications pages.

The information provided in this response to the request for additional information does not change the evaluations or conclusions presented in FENOC letter L-00-143. If there

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are any questions concerning this matter, please contact Mr. Thomas S. Cosgrove, Manager Regulatory Affairs at 724-682-5203.

Sincerely,

Mark Reason for
Lew W. Myers

Attachments

c: Mr. L. J. Burkhart, Project Manager
Mr. D. M. Kern, Sr. Resident Inspector
Mr. H. J. Miller, NRC Region I Administrator
Mr. D. A. Allard, Director BRP/DEP
Mr. L. E. Ryan (BRP/DEP)

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I, Marc P. Pearson, being duly sworn, state that I am Director, Nuclear Services of FirstEnergy Nuclear Operating Company (FENOC), that I am authorized to sign and file this submittal with the Nuclear Regulatory Commission on behalf of FENOC, and that the statements made and the matters set forth herein pertaining to FENOC are true and correct to the best of my knowledge and belief.

FirstEnergy Nuclear Operating Company

Marc P. Pearson
Director, Nuclear Services - FENOC

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF BEAVER

Subscribed and sworn to me, a Notary Public, in and for the County and State above named, this 29th day of June, 2001.

Tracey A. Baczek
My Commission Expires:

Notarial Seal
Tracey A. Baczek, Notary Public
Shippingport Boro, Beaver County
My Commission Expires Aug. 16, 2001
Member, Pennsylvania Association of Notaries

ATTACHMENT A to Letter L-01-088

Beaver Valley Power Station, Unit Nos. 1 and 2
License Amendment Request Nos. 286 and 158

[redacted]

Response to Request for Additional Information

Beaver Valley Unit 1
Question 1:

Item (3) Revision of the trip setpoint and allowable value descriptions for Functional Units 2 and 12 contained in Table 2.2-1. Also, for Functional Unit 12, the associated footnote designated by a single asterisk would be deleted.

RAI: In addition to the changes described, the submittal proposes deleting the footnote * defined as "Design flow is 87,200 gpm per loop" from CTS Table 2.2-1, Functional Unit 12 (Loss of Flow) and changing the units of measure of the functional unit tripsetpoint and allowable value given as "% of design flow* per loop to "% of indicated flow". Additional justification is required for this proposed change.

Response:

The following text is excerpted from a generic communication that Westinghouse sent to customers in May, 2000, on the subject of RCS Loop Flow Asymmetry. The following portion dealt with the Technical Specification for the Low Flow reactor trip setpoint and the associated footnote for some plants specifying a loop design flow rate. This justifies the proposed change, which is also consistent with the format used in the Improved Technical Specifications, NUREG-1431.

How should the loop design flow identified in the Technical Specifications for the low RCS flow reactor trip setpoint be interpreted?

The reactor coolant loop low flow reactor trip function is designed to trip the reactor when the coolant flow in any loop decreases below a defined fraction (typically 90%) of the normal loop flow rate. The setpoint for this function is set to a value that is low enough to prevent spurious actuation on normal indicated flow variations, yet high enough such that the reactor is promptly tripped when a true loss of flow event occurs.

Consistent with this basis, Westinghouse has generally recommended that the low flow trip setpoint be set as a fraction of the actual indicated flow rate in each loop. This "relative" method of setting the trip preserves the analysis assumption of the calculated time it takes to reach the setpoint. Also consistent with this recommendation, some older plant Technical Specifications define the setpoint as "$\geq$ 90% of indicated loop flow." Furthermore, the more recent NUREG-1431 Improved Technical Specifications format simply lists the setpoint as "$\geq$ 90%."

However, the Technical Specifications for many plants, specifically those based on the NUREG-0452 Standard Technical Specifications for Westinghouse plants, define the setpoint as "$\geq$ 90% of design flow per loop," with an associated footnote that defines the loop design flow rate as an absolute number. In this case, some plants have procedures that require the setpoint to be raised to a value above 90% of indicated in a particular loop if flow in that loop is less than the loop design value defined in the footnote (i.e., asymmetric loop flows). Apparently, the intent of such procedures is to ensure that

the absolute loop flow at the setpoint is maintained above the value assumed in the safety analysis. This practice may be deemed to be necessary to literally comply with the Technical Specification as written for this trip setpoint. However, there is no safety analysis basis or requirement for resetting this setpoint in a loop that is deemed to have a flow that falls short of the nominal loop fraction of the applicable design flow. See the following discussion.

If the total RCS flow requirement is met but there is a loop flow asymmetry then some loop(s) may not meet the nominal loop fraction of the total flow, in which case other loop(s) exceed their nominal fraction. In such a case, resetting of the trip setpoint in a "low flow" loop does not improve the transient results. Each of the safety analysis events that rely upon the low flow reactor trip function is discussed below.

Partial Loss of Flow - The low flow reactor trip is the primary protection for a Partial Loss of Flow event (PLOF), which is characterized by the coastdown of one (for some plants two) reactor coolant pumps. In the event of an initial RCS loop flow asymmetry the limiting case would be the coastdown of the "high flow" loop(s), since this would result in the lowest total core flow transient. Thus, an adjustment of the setpoint in a "low flow" loop has no effect on the limiting results for this event. In addition, while the PLOF relies on the low flow trip, the Complete Loss of Flow (CLOF) event typically relies on a different trip function for primary protection (see below). Yet, the results of the PLOF analysis are always shown to be bounded by the (CLOF) analysis results. This would continue to be true even if the low flow setpoint were slightly lower.

Complete Loss of Flow - This event is characterized by the loss of power to all reactor coolant pump motors, resulting in a coastdown of all pumps, or by a power supply frequency decay which forces a reduction in the pump speed, and therefore a flow reduction, in all loops. Typically, primary protection for a CLOF is provided by the RCP Undervoltage or Underfrequency reactor trip functions, which anticipate the loss of flow and thus are more effective than the low flow trip in limiting the consequences of a CLOF event. While the low flow trip acts as a backup trip in this case, depending on the specific plant margins, it may not be sufficient to prevent violating the DNBR criterion. However, for various reasons a few plants credit the low flow trip as primary protection against a CLOF, and the analysis results demonstrate that the DNB design basis is met. In this situation adjustment of the setpoint in a "low flow" loop would not adversely affect the analysis results since a reactor trip would still be generated at the same time following initiation of the event. The resulting core flow transient would be the same since the "high flow" loop would compensate for the "low flow" loop shortfall.

Locked Rotor/RCP Shaft Break - The low flow trip also provides primary protection for a Locked Rotor/RCP Shaft Break accident. For this event, the rapid reduction in the faulted loop flow results in an immediate reactor trip which limits the extent of DNB and ensures adequate core cooling capability and RCS pressure boundary integrity. Similar to PLOF discussed above, in the event of an initial RCS loop flow asymmetry the limiting case would be a locked rotor/shaft break in the "high flow" loop, since this would result in the lowest total core flow transient. Thus, an adjustment of the setpoint in a "low flow"

loop has no effect on the limiting results for this event. Furthermore, in a locked rotor event the low flow trip setpoint is reached in the faulted loop very rapidly, in less than 0.1 second, and thus the specific setpoint does not significantly affect the transient results.

Based on the foregoing, the following conclusions are reached regarding the loop design flow specified for the low flow setpoint for some plants:

1. For plants where the Technical Specifications designate the low flow reactor trip setpoint as a percentage of a specific design loop flow rate (i.e., as in NUREG-0452), the design loop flow should not be interpreted as a specific flow requirement that each loop must meet. There are no surveillance requirements or actions associated with the design loop flow rate listed in the reactor trip setpoint section of the Technical Specifications. The minimum RCS flow requirement is contained elsewhere in the Technical Specifications (section 3/4.2 in NUREG-0452) and is only for total flow, not individual loop flows.

2. There is no basis in the safety analyses for procedures that require adjusting of the low flow reactor trip setpoint for individual loops that are determined to not meet the loop design flow value. In order to avoid issues related to literal compliance with such a Technical Specification, consideration should be given to deleting the portion of the setpoint description "... of design loop flow" and the associated footnote from the Technical Specification, consistent with the NUREG-1431 format. If this is done, associated plant procedures that require the adjustment of the setpoint in order to ensure meeting a defined absolute flow value may be eliminated.

Question 2:

Item(4) Revision of the trip setpoint and allowable value description for Functional Unit 15 contained in Table 2.2.-1.

RAI: In addition to the changes described, the submittal proposes changing the units of measure for CTS Table 2.2-1, Functional Unit 15 (Undervoltage-Reactor Coolant Pumps) to "% of Nominal Bus Voltage" from "% of Bus Voltage". Additional justification is required for this proposed change

Response:

The units of measure for CTS Table 2.2-1, Functional Unit 15 (Undervoltage-Reactor Coolant Pumps) have been revised to "% of rated bus voltage". The revised marked up technical specification page 2-7 is contained in Attachment B.

Question 3:

Item (5) Revision of allowable value description for Functional Unit 20D contained in Table 2.2-1.

RAI: In addition to the changes described, the submittal proposes changing the units of measure for CTS Table 2.2-1, Functional Unit 20.D (Power Range Neutron Flux, P-10 (Input to P-7)) to a lower limit of "% RATED THERMAL POWER on increasing power" and "% RATED THERMAL POWER on decreasing power" from "% RATED THERMAL POWER". Additional justification is required for this proposed change.

Response:

P-10 serves several functions, 1) as an enable of the NIS Power Range – Low reactor trip and the NIS Intermediate Range reactor trip and 2) as an input to P-7 for the block of "at power" reactor trips at low power. These multiple functions require different limits on the Allowable Value for P-10. On decreasing power, the limit is on how low in power the enable to the NIS Power Range and NIS Intermediate Range trips is performed. The plant must not be allowed to decrease too low in power before these two trips are enabled. On increasing power, the limit is on how high in power the input to P-7 for the block of the "at power" trips is provided. The plant must not be allowed to increase too high in power before the "at power" trips are enabled (block removed). Thus the redefinition of the P-10 Allowable Value to be a two-sided function based on increasing or decreasing power.

Question 4:

Item (15) Revision of the trip setpoint and allowable value description for Functional Unit 7.b contained in Table 3.3-4.

RAI: In addition to the changes described, the submittal proposes changing the units of measure for CTS Table 3.3-4, Functional Unit 7.b (Auxiliary Feedwater Undervoltage-RCP) to "nominal voltage" from "voltage." Additional justification is required for this proposed change

Response:

The units of measure for CTS Table 3.3-4, Functional Unit 7.b (Auxiliary Feedwater Undervoltage-RCP) have been revised to "% of rated bus voltage." These units were made consistent with those of Table 2.2-1 Functional Unit 15 as the same relay is used to monitor the parameter. The relay effectively provides two outputs, reactor trip and start of the turbine driven auxiliary feedwater pump on this parameter decreasing to the relay setpoint. The revised marked up technical specification page 3/4 3-24a is contained in Attachment B.

In order to make the presentation of units of measure associated with bus voltage consistent in Table 3.3-4, the units of measure for "Loss of Power" specified in Functional Units 6.a, 6.b, and 6.c have been revised from "% of nominal bus voltage" to "% of rated bus voltage". The revised marked up technical specification page 3/4 3-24 is contained in Attachment B.

Beaver Valley Unit 2

Question 5:

Item (19) Revision of allowable value and trip setpoint description for Functional Unit 12 contained in Table 2.2-1. The associated footnote designated by a double asterisk would be deleted.

RAI: In addition to the changes described, the submittal proposes deleting the footnote * defined as "Design flow is 87,200 gpm per loop" from CTS Table 2.2-1, Functional Unit 12 (Loss of Flow) and changing the units of measure of the functional unit tripsetpoint and allowable value given as "% of design flow* per loop to "% of indicated flow". Additional justification is required for this proposed change

Response:

The response to this question is the same response provided for Question number 1.

Question 6:

Item (20) Revision of trip setpoint and allowable value description for Functional Unit 15 contained in Table 2.2-1.

RAI: In addition to the changes described, the submittal proposes changing the units of measure for CTS Table 2.2-1, Functional Unit 15 Undervoltage-Reactor Coolant Pump) to "% of Nominal Bus Voltage" from "% of Bus Voltage." Additional justification is required for this proposed change.

Response:

The units of measure for CTS Table 2.2-1, Functional Unit 15 (Undervoltage-Reactor Coolant Pumps) have been revised to "% of rated bus voltage." In addition, the units of measure for CTS Table 3.3-4, Functional Unit 7.c (Auxiliary Feedwater Undervoltage-RCP) have been revised to "% of rated bus voltage." These units were made consistent for both Functional Units as the same relay is used to monitor the parameter. The relay effectively provides two outputs, reactor trip and start of the turbine driven auxiliary feedwater pump on this parameter decreasing to the relay setpoint. The revised marked up technical specification pages 2-5 and 3/4 3-27 are contained in Attachment C.

In order to make the presentation of units of measure associated with bus voltage consistent in Table 3.3-4, the units of measure for "Loss of Power" specified in Functional Units 6.a, 6.b, and 6.c have been revised from "% of nominal bus voltage" to "% of rated bus voltage". The revised marked up technical specification page 3/4 3-26 is contained in Attachment C.

Question 7:

Item (21) Revision of allowable value description for Functional Unit 22.d contained in Table 2.2-1.

RAI: In addition to the changes described, the submittal proposes changing the units of measure for CTS Table 2.2-1, Functional Unit 20.d (Power Range Neutron Flux, P-10 (Input to P-7)) to a lower limit of "% RATED THERMAL POWER on increasing power" and "% RATED THERMAL POWER on decreasing power" from "% RATED THERMAL POWER". Additional justification is required for this proposed change

Response:

The response to this question is the same response provided for Question number 3.

RELOCATION OF CERTAIN ITEMS IN TS TO THE CORE OPERATING LIMIT REPORT

Question 8:

RAI: Item (51) proposes TS changes that include deviations from TSTF-339, Rev. 2 approved TS Bases. These deviations from TSTF-339, Rev. 2 are not justified in the submittal. Additional justification is required for these proposed changes.

Response:

TSTF 339 is written based on the wording contained in the Improved Standard Technical Specifications (ISTS) Bases. BVPS does not have a standard ISTS Bases. Therefore, some allowances are necessary when comparing the BVPS submittal to the TSTF. The key elements of the TSTF Bases information have been retained in a format and detail consistent with the present BVPS Bases. The following information is provided to assist the reviewer in understanding how the recommended TSTF Bases were adapted to the current BVPS format.

In the Applicable Safety Analyses Section, no replacement of "specific automatic functions", such as high pressurizer pressure trip, low pressurizer pressure trip, etc., with a summary denoted as "RPS and steam generator safety valves" is provided in the BVPS markup since the current TS, which is based on NUREG-0452, does not include the specific listing. However, the last sentence of BVPS Unit 1 Insert 7 and Unit 2 Insert 6 does indicate that "Appropriate functioning of the RPS ensures that for variations in the

THERMAL POWER, RCS Pressure, RCS average temperature, RCS flow rate, and ΔI that reactor core Safety Limits will be satisfied during steady state operation, normal operational transients, and AOOs". Therefore, the intent of the TSFT-339, Rev. 2 markup on page B 2.0-2 in provided by the BVPS Unit 1 Insert 7 and Unit 2 Insert 6.

The first markup on page B 2.0-3 of TSTF-339, Rev. 2, is provided to indicate that Figure B 2.1.1-1 no longer exists in the TS Bases. It refers to the COLR for the figure that provides "the loci of points of THERMAL POWER, RCS Pressure, and average temperature for which the minimum DNBR is not less than the safety analysis limit,..." The BVPS TS do not currently have this Bases figure, therefore, this specific change need not be made. However, the figure that provides the subject loci of points is found in the COLR in the form of the BVPS relocated Figure 2.1-1. The proposed BVPS Bases markups reflect this change.

The information that is deleted on page B 2.0-3 of TSTF-339, Rev. 2, for Insert 2 does not exist in the BVPS markup. However, the information provided in Insert 2 is provided in BVPS Insert 7 for Unit 1 and Insert 6 for Unit 2 to state the purpose of the core safety limits. The references deleted on the markup of page B 2.0-4 of TSTF-339, Rev. 2, are not specified in the BVPS Reactor Core Safety Limit Bases section.

Page B 2-1 of the current BVPS Units 1 and 2 TS are being revised to be generally consistent with TSTF-339, Rev. 2 and the incorporation of the RTDP Methodology. The WRB-1 Correlation value, in the paragraph that defines the DNB design basis, is being relocated to Section 2.1.1 of the TS. The sentence that includes that value is deleted. The remaining information in that paragraph is revised and replaced by BVPS Insert 4 for clarity and for consistency with the verbiage of the RTDP Methodology. The next paragraph is replaced by Insert 5 in order to include the new DNBR Design Limits and to remove the repetitious wording that refers to the 95/95 probability/confidence level discussed in Insert 4. BVPS Unit 1 Insert 6 is provided for consistency with BVPS Unit 2 and to indicate the relationship of the COLR peaking factors and the relocated Figure 2.1-1.

Question 9:

RAI: Items (45), (47), (50), (52) and (54), include changes that are deviations from WCAP-14483-A approved TS. These deviations are not justified in the submittal. Additional justification is required for these proposed changes.

Response:

Item (45) is justified on page B-30 third Paragraph and states the following:

"The definition of the Core Operating Limits Report specified in Section 1.0 of the BVPS technical specifications is being revised to be consistent with the ISTS. This proposed change is necessary since the required scope of the COLR will be expanded by this proposed LAR. The COLR will now contain plant parameters

which are not solely core operating limits. Therefore, the COLR definition is being revised to encompass the additional COLR scope by specifying cycle specific parameter limits instead of core operating limits. For BVPS Unit No. 1 only, the reference to Specification 6.9.1.12 is being changed to Specification 6.9.5 to accurately reflect the Administrative Control section that contains the COLR. The remaining changes are necessary to revise the current definition to be consistent with the ISTS. The proposed changes to the COLR definition are administrative or editorial in nature and do not affect plant safety."

This change is not part of WCAP 14483 and was not characterized as part of the WCAP. WCAP 14483 does not specify changes to the COLR definition. This WCAP is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. Therefore, the proposed changes to the COLR definition are necessary to update the BVPS COLR definition to be consistent with NUREG 1431 in order to properly implement WCAP-14483.

Item (47) is justified on page B-29 second paragraph and states the following:

"The action requirement for Safety Limit 2.1.1 will be revised to reflect the relocation of the Safety limits curve and the addition of the two new limits specified in 2.1.1.1 and 2.1.1.2. The current action is not appropriate for the revised Safety limit 2.1.1 since it is based on only the limits specified in Figure 2.1-1. The actions for violation of a Safety Limit specified in 2.1.1 will include the restoration of Safety Limit compliance and entry into Hot Standby within 1 hour. This proposed change is consistent with the ISTS."

WCAP 14483 does not specify changes to the Safety Limit actions. This WCAP is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. Therefore, the proposed change to the reactor core Safety Limit action is necessary to update this BVPS action requirement to be more consistent with NUREG 1431.

Item (50) is justified on page B-29 last paragraph and states the following:

"Relocating the Overtemperature ΔT and Overpressure ΔT setpoint parameters to the COLR will enable the plant to implement cycle-specific changes to the setpoints without having to submit a license amendment. With this added flexibility the plant will be able to more efficiently take advantage of cycle-specific margins to optimize trip setpoints. Consistent with similar wording approved for Seabrook Unit No. 1 in amendment number 76 (TAC No. MA8764), the relocated Overtemperature ΔT and Overpressure ΔT setpoint parameters values (including inequalities/equalities and associated Units of measure) will be replaced with the wording "as specified in the COLR." Relocating the entire term (value, inequalities/equalities, and Units of measure) will eliminate unnecessary repetition of this terms in both the COLR and in the technical specifications. Relocating the DNB parameter limits to the Core Operating Limits Report will give Beaver Valley the flexibility to optimize margins between the cycle-specific analysis limits and plant operational limits."

The NRC SER states that WCAP 14483 allows overtemperature and overpower trip setpoint parameters to be relocated to the COLR. The values including the mathematical operators for K, T', T'', time constants, and the f(ΔI) have been relocated to the COLR. These variables are moved from the TS to the COLR to avoid the need for frequent revision of TS to change the value of those operating limits which cannot be specified to reasonably bound several operating cycles without significant loss of flexibility.

With the mathematical operator remaining in the technical specifications, a revision to the COLR value may require revision to the associated mathematical operator. Thus, the purpose of relocating these values to the COLR (i.e. avoid the need for revision of TS to change the value) would be negated since the mathematical operator is specified in the technical specifications. From a human factors standpoint, the relocation of the entire value (including the mathematical operator) provides additional assurance that the correct value is utilized. For example, if the mathematical operator is a negative sign, the value specified in the COLR will also have a negative sign. When utilizing this value, it will not be clear that only the absolute value specified in the COLR is utilized in the setpoint equation. The duplicate negative sign in the TS would add unnecessary confusion. By simply stating in the technical specification that the value is specified in the COLR, it will be clear that the negative sign is utilized in the setpoint equation. In addition to introducing the potential for confusion, mathematical operators without associated numerical values give the technical specification user no meaningful information.

As far as this change being a deviation to the WCAP, the WCAP specifies that the value can be relocated to the COLR. This LAR appropriately proposes the relocation of the entire value. The mathematical operators are part of the value. Thus, this LAR is consistent with the WCAP. The sample markups in WCAP 14483 provide examples of how this task can be accomplished. The sample markups are guides to illustrate one way to accomplish the purpose of the WCAP.

The requirements of 10 CFR 50.36 continue to be met as the limiting safety system settings (i.e. the Allowable values for the Overtemperature and Overpower ΔT) continue to be specified in the technical specifications. Although not exactly like the "example" markups included in the WCAP, the proposed changes are consistent with the purpose of the WCAP and the requirements of 10 CFR 50.36 and, therefore, provide an acceptable method to implement the staff approved report that justifies relocation of these values to the COLR.

Item (52)- TSTF 339 Rev 2 modifies the Technical Specification markups provided in WCAP 14483 to reflect that "the Figure located in the COLR shows the loci of points of thermal power, RCS pressure, and average temperature for which the minimum DNBR is not less than the limit,". Therefore, this Bases change is consistent with TSTF 339 Rev 2 which corrects the proposed Technical Specification markups provided in WCAP 14483 to reflect where the Safety Limit curve is located.

Item (54)- is justified on page B-41 item number 3 and states the following:

> **"The values for the DNB parameters specified in TS 3.2.5 (with the exception of minimum total RCS flow) are being relocated by a change discussed in Section 3 of this LAR. In addition to relocating the parameter values, several administrative changes are proposed to TS 3.2.5 to improve consistency with the ISTS. The parameter Table (3.2-1) would be deleted and the parameters addressed by the TS would be listed in the LCO statement. Existing Note 1 for Pressurizer Pressure in Table 3.2-1 is moved directly into the TS and is referenced from the LCO requirement for pressurizer pressure. As the parameter values are being relocated, the elimination of the parameter table is a simplification of the TS format that is reasonable and consistent with the ISTS presentation of this information. .....As the proposed changes to the DNB TS follow the guidance of the NRC approved ISTS, these changes are acceptable."**

WCAP 14483 does not specify changes to the footnote on the pressurizer pressure limit. This WCAP also does not specify the elimination of Table 3.2-1 where the BVPS limit on pressurizer pressure is currently located. This WCAP is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. As discussed above, Table 3.2-1 will be eliminated. Since the exception to the pressurizer pressure limit is still required, this limit will be moved to modify the LCO. NUREG 1431 Rev 1 contains this exception in a note that modifies the LCO requirements. Therefore, the proposed change to the footnote on the pressurizer limit is necessary to update this BVPS DNB parameter specification to be more consistent with NUREG 1431.

Question 10:

RAI: Item (55) represents a deviation from WCAP-14483-A. This deviation is not justified in the submittal. Additional justification is required for these proposed changes.

Response:

Item (55)- is justified on page B-30 first paragraph and states the following:

> **"The DNB parameters for pressurizer pressure and RCS average temperature are being relocated to the COLR. These relocated values have been changed from analysis values to indicated values. RCS total flow rate is also being changed from the analysis value to an indicated value. The indicated RCS total flow rate will be contained in the COLR. However, the current analysis value of 261,600 gpm will be retained in LCO 3.2.5. This number is the minimum NRC approved value for RCS total flow rate. Retaining this minimum analysis value will assure that a lower flow rate than reviewed by the NRC will not be used. This proposed change follows the NRC approved guidance contained in TSTF- 339, Revision 2 to the ISTS."**

The proposed Bases changes are consistent with TSTF 339 Rev 2. The changes to Bases section of 3/4.2.5, as provided in WCAP 14483, are made to remove all references to cycle specific parameters that may be impacted due to core reload design. These include the DNB criterion value, the pressurizer pressure limit, the RCS average temperature limit, the RCS flow measurement error value, and the feedwater venturi fouling value. For those values that are TS limits, reference to the COLR is provided. The current BVPS Bases wording does not provide this level of detail on the DNB parameters. Therefore, the proposed changes to the Bases specified in WCAP 14483 are not applicable to the BVPS Bases wording. Consistent with TSTF-339, Rev. 2, text is added to the current BVPS Bases wording to indicate that the minimum RCS flow rate value is retained in the LCO. This flow value is based on the maximum analyzed steam generator tube plugging value.

Question 11:

RAI: In addition to the list of changes described, revision of Safety Limit Figure 2.1-1 is also proposed. This deviation is not justified in the submittal. Additional justification is required for this proposed change.

Response:

The revision of Figure 2.1-1 is being proposed due to the implementation of the Revised Thermal Design Procedure. Revision of Safety Limit Figure 2.1-1 is justified on page B-27 first paragraph and states the following:

"The DNB analysis is being modified to incorporate the RTDP as licensed by Westinghouse. With the RTDP methodology, uncertainties in plant operating parameters, nuclear and thermal parameters, fuel fabrication parameters, computer codes and DNB correlation predictions are combined statistically to obtain the overall DNB uncertainty factor which is used to define the design limit DNBR that satisfies the DNB design criterion. The criterion is that the probability that DNB will not occur on the most limiting fuel rod is at least 95% (at a 95% confidence level) for any Condition I and II event. Since the parameter uncertainties are considered in determining the RTDP design limit DNBR values, the plant safety analyses are performed using input parameters at their nominal values. The uncertainties included are the nuclear enthalpy hot-channel factor, $F^N_{\Delta H}$; the enthalpy rise engineering hot-channel factor, $F^E_{\Delta H,1}$; and the THINC-IV transient codes; uncertainties, based on surveillance data, associated with vessel coolant flow, core power, coolant temperature, system pressure and effective flow fraction (i.e., bypass flow). The increase in DNB margin is realized when nominal values of the preceding factors are used in the DNB safety analysis. The Reactor Core Safety Limits form the basis for the reactor protection system Overtemperature ΔT and Overpower ΔT setpoints. Therefore, the justification for changing TS Figure 2.1-1 is to ensure that the revised basis for the Overtemperature ΔT and Overpower ΔT setpoints is presented."

RELOCATION OF CERTAIN ITEMS IN TS TO THE LICENSING REQUIREMENT MANUAL

Question 12:

RAI: In the list of changes items (61), (62), (63), (64), (65), (66), (67), (68) and (69) are not part of staff approved TS changes related to TSTF-355. These deviations are not justified in the submittal. Additional justification is required for these proposed changes.

Response:

Item (61) – is justified on page B-31 last paragraph and states the following:

> **"Additionally, the ISTS presentation of the RTS setpoints does not include a separate TS section for the LSSS as does the previous standard TS and the BVPS TS. The ISTS incorporates the LSSS into the RTS TS instrumentation table that contains all the requirements applicable to the RTS instrument functions. The ISTS also does not contain a separate setpoint table in the ESFAS TS as does the previous standard TS and the BVPS TS. The ESFAS setpoints are also integrated into the ESFAS TS Table that contains all the other requirements applicable to the ESFAS instrument functions. The ISTS presentation of this information simplifies the TS eliminating redundancy and the need to refer between different instrumentation tables for setpoint information and instrument operability requirements. The human factored ISTS presentation of this information provides a substantial benefit to the end user and to the general clarity of the affected TS requirements."**

This change is a format change and is consistent with the ISTS. The Tables that are being described above are Tables 2.2-1 for the reactor trip system trip setpoints and Table 3.3-4 for the ESFAS trip setpoints. TSTF –355 is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. Therefore, the proposed change to the delete Tables 2.2-1 and 3.3-4 is based on updating the current BVPS technical specifications to the NUREG 1431 Rev 1 format. As described above, the change improves clarity and provides a substantial human factors benefit for the TS user.

Item (62) – is justified on page B-38 item d and states the following:

> **"The proposed changes include revisions to the TS bases that result from relocating the Trip Setpoints, moving the Allowable Values, and eliminating the LSSS section of the TS. The bases changes include moving the instrumentation bases from Section 2.2.1 (which was deleted) to the RTS TS bases in Section 3. In addition, the changes include new bases text applicable to the adjustment and maintenance of the Trip Setpoints that is consistent with the guidance in the ISTS and TSTF-355 for instrumentation operability details."**

"The administrative changes described above are made to support the relocation of the Trip Setpoints and the movement of the Allowable Values into comprehensive instrument operability Tables. The proposed revisions do not introduce technical changes to the TS and only affect the format and presentation of the BVPS TS. In addition, the proposed revisions serve to increase consistency between the BVPS units and with the ISTS. Therefore, these changes are acceptable."

This change is a format change that is consistent with the ISTS. TSTF –355 is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. Therefore, the proposed change to move Bases section 2.2-1 is based on updating the current BVPS technical specifications to the NUREG 1431 Rev 1 format.

Item (63) –is justified on page B-33 item number 1 and states the following:

"Once the LSSS have been removed from TS section 2.2.1 and combined with the RTS TS, TS section 2.2.1 becomes redundant and unnecessary."

"As previously explained, the current standard TS in the ISTS do not contain a specific TS section 2.2.1 for the LSSS. The setpoints associated with the RTS instrumentation are included in the RTS TS. Consistent with the guidance contained in the ISTS and TSTF-355, the TS 2.2.1 requirement to maintain and adjust the instrumentation setpoints consistent with the specified Trip Setpoints is explained in the standard TS Bases. The TS operability requirements focus on the Allowable Value or LSSS as required by 10 CFR 50.36. The TSTF and ISTS consider the maintenance of the Trip Setpoints within tolerance as operability related descriptive detail that is normally included in the ISTS bases. BVPS has proposed TS Bases additions that are consistent with the guidance of the ISTS and TSTF-355 to address the requirements to maintain and adjust the RTS instrumentation setpoints consistent with the specified Trip Setpoints."

"Once the Allowable Values are integrated into the RTS instrumentation operability requirements specified on Table 3.3-1, a separate TS 2.2.1 Action for exceeding the Allowable Value is no longer required. The LCO statement for the RTS TS refers to the requirements of Table 3.3-1 for the operability of the RTS instrumentation. If a requirement of Table 3.3-1 (including the Allowable Value) is not met for a specific instrument function a TS Action is applicable. The organization of all RTS instrumentation operability requirements (excluding surveillance requirements) on a single Table with a single LCO statement reference to the Table is consistent with the format and function of the corresponding standard TS in the ISTS."

"The TS 2.2.1 Applicability simply references the RTS Table 3.3-1. The inclusion of the Allowable Values from Table 2.2-1 in Table 3.3-1 provides all the operability requirements for the RTS instrumentation in one Table and eliminates the need to reference Table 3.3-1 for Applicability requirements. The Applicability of the RTS instrumentation is directly determined from Table 3.3-1 within the RTS TS. As

such, the deletion of the reference to Table 3.3-1 in TS 2.2.1 has no impact on the RTS instrument requirements."

"Based on the discussions above, the proposed changes serve to simplify the BVPS TS and make them more consistent with the ISTS without reducing the technical requirements important to the safe operation of the plant. The proposed changes incorporate features from the ISTS that result in a substantial improvement in the clarity and internal consistency of the TS. Therefore, these changes are acceptable."

"The BVPS Unit No. 2 TS 2.2.1 contains an equation that provides an alternate Action for inoperable RTS instrumentation. This equation was intended to provide an alternate Action that could reduce the number of reports required for inoperable instrument channels. However, the applicable reporting requirements (10 CFR 50.73) were revised and the need for the alternate Action provided by this equation no longer exists. This equation is not part of the current standard TS and no longer has any impact on the operability of the RTS instrumentation. The elimination of this equation and all the associated terms from the BVPS TS is discussed in Section 1 "Revision to Setpoint and Allowable Values" of this LAR."

This change is a format change that is consistent with the ISTS. TSTF –355 is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. Therefore, the proposed change to eliminate Section 2.2 is based on updating the current BVPS technical specifications to the NUREG 1431 Rev 1 format.

Item (64) –is justified on page B-34 item number 2 and states the following:

"As part of moving the Allowable Values for the RTS instrumentation from Table 2.2-1 to Table 3.3-1, the Overtemperature and Overpower ΔT equation notes and terms are also moved. As the Allowable Values for the Overtemperature and Overpower ΔT instrument functions reference the Trip Setpoint equation for these functions, the trip setpoint equation is being retained within the TS and moved to Table 3.3-1 along with the Allowable Value. The existing BVPS TS contain four equation notes to address the Overtemperature and Overpower ΔT instrument functions. A separate note is provided for the Trip Setpoint and the Allowable Value for each function. As the Allowable Value (LSSS) is being retained in Table 3.3-1, and for the Overtemperature and Overpower ΔT instrument functions the Trip Setpoint is integral to the Allowable Value, the separate equation notes for Trip Setpoint and Allowable Value are being combined in Table 3.3-1. BVPS is proposing only two notes be referenced in Table 3.3-1 instead of four. Each note will state the Allowable Value for one of the functions and reference the included Trip Setpoint equation. Additionally, in order to better integrate the new Overtemperature and Overpower ΔT equation notes into the Table 3.3-1 Table Notation, the note numbers are revised to an alpha designation "A" and "B"."

"The proposed changes to these equation notes (combination and renumbering) discussed above are changes to the format and presentation of the Overtemperature and Overpower ΔT instrument setpoint information. The changes are not technical in nature and are considered administrative changes necessary to conform to the single LSSS instrument value being retained in TS Table 3.3-1. Therefore, these changes are acceptable. In addition to the changes described above, this LAR contains several other changes to these equations (both in format and technical) that are related to other major changes and are discussed in Section 1 titled "REVISION TO SETPOINT AND ALLOWABLE VALUES."

This change is a format change that is consistent with the ISTS. TSTF –355 is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. Therefore, the proposed change to move the Overtemperature and Overpower ΔT setpoint equations to table notation section of Table 3.3-1 is based on updating the current BVPS technical specifications to the NUREG 1431 Rev 1 format.

Item (65) –is justified on page B-34 item number 2 and states the following:

"As part of moving the Allowable Values for the RTS instrumentation from Table 2.2-1 to Table 3.3-1, the Overtemperature and Overpower ΔT equation notes and terms are also moved. As the Allowable Values for the Overtemperature and Overpower ΔT instrument functions reference the Trip Setpoint equation for these functions, the trip setpoint equation is being retained within the TS and moved to Table 3.3-1 along with the Allowable Value. The existing BVPS TS contain four equation notes to address the Overtemperature and Overpower ΔT instrument functions. A separate note is provided for the Trip Setpoint and the Allowable Value for each function. As the Allowable Value (LSSS) is being retained in Table 3.3-1, and for the Overtemperature and Overpower ΔT instrument functions the Trip Setpoint is integral to the Allowable Value, the separate equation notes for Trip Setpoint and Allowable Value are being combined in Table 3.3-1. BVPS is proposing only two notes be referenced in Table 3.3-1 instead of four. Each note will state the Allowable Value for one of the functions and reference the included Trip Setpoint equation. Additionally, in order to better integrate the new Overtemperature and Overpower ΔT equation notes into the Table 3.3-1 Table Notation, the note numbers are revised to an alpha designation "A" and "B"."

"The proposed changes to these equation notes (combination and renumbering) discussed above are changes to the format and presentation of the Overtemperature and Overpower ΔT instrument setpoint information. The changes are not technical in nature and are considered administrative changes necessary to conform to the single LSSS instrument value being retained in TS Table 3.3-1. Therefore, these changes are acceptable. In addition to the changes described above, this LAR contains several other changes to these equations (both in format and technical) that are related to other major changes and are discussed in Section 1 titled "REVISION TO SETPOINT AND ALLOWABLE VALUES."

TSTF –355 is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. Therefore, the proposed change to renumber and combining the Overtemperature and Overpower ΔT equation notes is based on updating the current BVPS technical specifications to a format more similar to the NUREG 1431 Rev 1.

Item (66) –is justified on page B-35 item number 3 and states the following:

"Changes are proposed to the ESFAS TS LCO statement and Actions to simplify the TS consistent with the relocation of the Trip Setpoints from the TS and with the combined instrument Table containing all operability requirements (excluding surveillance requirements) for the ESFAS instrumentation."

"The current LCO refers to two Tables for the ESFAS instrument operability requirements (Table 3.3-3 and Table 3.3-4). Consistent with the elimination of Table 3.3-4 from the TS and the inclusion of the Allowable Values from Table 3.3-4 in Table 3.3-3, the reference to Table 3.3-4 in the ESFAS LCO is no longer required. The changes described earlier eliminated the need for a separate instrument table for setpoints and combined the ESFAS setpoint information with the other operability requirements in one table (ESFAS Table 3.3-3). Therefore, the LCO statement referring to Table 3.3-4 is no longer applicable and is deleted."

"Similarly, the ESFAS Actions are also simplified. The current ESFAS Actions contain statements that reference the Allowable Values in Table 3.3-4 and another Action that references Table 3.3-3. A separate Action referring to the Allowable Value in Table 3.3-4 is no longer required. The proposed change described earlier introduces a single Table 3.3-3 containing all the operability requirements for the ESFAS Instrumentation (including the Allowable Values) consistent with how the ISTS is organized. The proposed change would make the Action and LCO statements consistent with reference to a single table for ESFAS instrumentation operability. Therefore, the current multiple Action statements are reduced to one Action referencing Table 3.3-3 consistent with the LCO requirements. This change makes the BVPS TS more consistent with the format of the ISTS, and eliminates unnecessary text and Table references from the TS."

"The current ESFAS Actions also contain statements that require the adjustment of instrument setpoints consistent with the Trip Setpoints specified in the TS. Consistent with the guidance contained in ISTS and TSTF-355, the ESFAS requirement to adjust the instrumentation setpoints consistent with the specified Trip Setpoints is explained in the Bases. The TS operability requirements focus on the Allowable Value or LSSS as required by 10 CFR 50.36. The TSTF and ISTS consider the maintenance of the Trip Setpoints within tolerance as operability related descriptive detail that is normally included in the ISTS bases. BVPS has proposed TS Bases additions that are consistent with the guidance of the ISTS and TSTF-355 to address the requirements to adjust the ESFAS instrumentation setpoints consistent with the required Trip Setpoints."

"The changes to the ESFAS LCO and Actions described above are considered administrative changes needed to support the relocation of the Trip Setpoints and the combination of the instrument tables discussed previously. The changes also serve to simplify the ESFAS TS and improve consistency with the ISTS. Therefore, these changes are acceptable."

TSTF –355 is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. Therefore, the proposed change to modify the action requirements is based on updating the current BVPS technical specifications to a format more similar to the NUREG 1431 Rev 1.

Item (67) – see response to item (66) above with the additional justification stated below from page B-36 :

"The BVPS Unit No. 2 ESFAS Actions contain an option not present in the BVPS Unit No. 1 ESFAS Actions. The BVPS Unit No. 2 TS contains an equation that provides an alternate Action for inoperable ESFAS instrumentation. This equation was intended to provide an alternate Action that could reduce the number of reports required for inoperable instrument channels. However, the applicable reporting requirements (10 CFR 50.73) were revised and the need for the alternate Action provided by this equation no longer exists. This equation is not part of the current standard TS and no longer has any impact on the operability of the ESFAS instrumentation. The elimination of this equation and all the associated terms from the BVPS TS is discussed in Justification Section 1 titled "REVISION TO SETPOINT AND ALLOWABLE VALUES."

TSTF –355 is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. Therefore, the proposed change to modify the action requirements is based on updating the current BVPS technical specifications to a format more similar to the NUREG 1431 Rev 1.

Item (68) –see response to items (66) and (67) above.

Item (69) –is justified on page B-37 item number 5 and states the following:

"In order to facilitate the relocation of the Trip Setpoints to the LRM and movement of Allowable Values to a combined instrumentation Table in the RTS and ESFAS TS, the following additional and less significant administrative changes are proposed:

a) Changes to the TS index pages are required to reflect the proposed elimination of the LSSS section of the TS and the elimination of the TS Tables 2.2-1 and 3.3-4.

b) Certain TS title pages affected by the elimination of the separate LSSS TS section are revised or eliminated to reflect this change.

c) **The format of retained RTS and ESFAS instrumentation Tables (3.3-1 and 3.3-3) is substantially revised to accommodate the addition of an Allowable Value column to these Tables. Additionally, the more comprehensive list of instrument functions on these Tables requires that the term "N.A." be added to the Allowable Value column where no setpoint is associated with the instrument function. For example, the current BVPS Unit No. 1 setpoint Tables (2.2-1 and 3.3-4) do not always include all functions such as manual switches which do not have a setpoint associated with them. When the BVPS Unit No. 1 setpoint information is transferred to the more comprehensive instrument function list on Tables 3.3-1 and 3.3-3 a line item is created in the Allowable Value column for all functions. In cases where no setpoint is associated with the function (e.g., manual switches) the term "N.A." or "Not Applicable" has been added to the Allowable Value column. This convention is consistent with the ISTS and BVPS Unit No. 2 presentation of this information. In order to keep the marked-up TS in Attachment A of this LAR clear and readable this level of detail is not specifically shown. These changes make both units more consistent with each other and with the ISTS.**

d) **The proposed changes include revisions to the TS bases that result from relocating the Trip Setpoints, moving the Allowable Values, and eliminating the LSSS section of the TS. The bases changes include moving the instrumentation bases from Section 2.2.1 (which was deleted) to the RTS TS bases in Section 3. In addition, the changes include new bases text applicable to the adjustment and maintenance of the Trip Setpoints that is consistent with the guidance in the ISTS and TSTF-355 for instrumentation operability details.**

e) **Numerous changes to page headers and footers are proposed to address the deletions and revisions previously discussed. These changes are shown in the marked-up pages included in Attachment A of this LAR and include all the pagination changes necessary to ensure the revised pages are properly integrated into the TS document.**

The administrative changes described above are made to support the relocation of the Trip Setpoints and the movement of the Allowable Values into comprehensive instrument operability Tables. The proposed revisions do not introduce technical changes to the TS and only affect the format and presentation of the BVPS TS. In addition, the proposed revisions serve to increase consistency between the BVPS units and with the ISTS. Therefore, these changes are acceptable."

TSTF –355 is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. Therefore, the proposed changes are based on updating the current BVPS technical specifications to a format more similar to the NUREG 1431 Rev 1.

Question 13:

RAI: Proposed TS changes for relocating RTS trip setpoints to the LRM while retaining Allowable Values in the LCO tables included deviations from TSTF-355 approved TS LCO and Bases. These deviations are not justified in the submittal. Additional justification is required for these proposed changes.

Response:

TSTF –355 is based on NUREG 1431 Rev 1. The BVPS Technical Specifications are based on NUREG 0452. Therefore, the proposed changes are based on updating the current BVPS technical specifications to a format more similar to the NUREG 1431 Rev 1. The proposed change to relocate the trip setpoints to the LRM is specifically permitted by the Reviewers Note (a) in Tables 3.3.1-1 and 3.3.2-1 of NUREG-1431. Insert 3 of TSTF- 355 permits use of a technical specification format with only an allowable value column. The trip setpoint values are to be located in Bases or in a licensee-controlled document outside of the technical specifications. The proposed change will relocate the trip setpoints to the LRM which is a licensee-controlled document outside of the BVPS technical specifications.

MISCELLANEOUS

Question 14:

RAI: In the list of changes described, items (84), and (85) are technical changes to current TS which require supporting safety analyses discussion. Additional justification is required for these proposed changes.

Response:

Item (84) – Revision of the technical specification Bases is not a technical change to the current TS. In accordance with 10 CFR 50.36, the Bases are not part of the technical specifications. However, this change is necessary to support the trip setpoints being relocated to LRM.

Item (85) – The proposed grammatical and punctuation changes to the TS and Bases do not represent technical changes. Examples include revising the words "provide" and "reduce" to the words "provides" and "reduces" on the Unit 1 Bases page B3/4 2-7 and capitalization of the first letter in the words "engineered safety feature actuation system" in Unit 2 Technical Specification 3/4.3.2. All changes are shown in Attachments A-1 and A-2 of the LAR.

Question 15:

RAI: In the list of changes, items (86) and (87) need citations to understand which changes are being proposed.

Response:

Item (86) - Examples of reformatting are; Unit 1 page 3/4 3-21 (addition of words "Next page is 3/4 3-29"), and Unit 1 page 3/4 3-5 where Table notation (A) and (B) will be added to this page. This addition of text will result in the typed version of this page reflecting that certain text currently contained on this page will be shifted to the next page. An example of deletion of text resulting in the deletion of technical specification pages is Unit 1 pages 2-5 through 2-10, where text will be deleted from these pages due to relocating these requirements. An example of updating a page to the current format is on Unit 2 page 3/4 3-4 where the proposed change eliminates the continuous line across the column headings. All changes are shown in Attachments A-1 and A-2.

Item (87) – The affected pages due to rotation of page footers are: Unit 1 pages 3/4 3-3, 3/4 3-16, 3/4 3-17, 3/4 3-19, and 3/4 3-19b, and Unit 2 pages 3/4 3-3, and 3/4 3-17.

Additional verbal comments from the NRC staff:

1. The Bases insert 7 (Unit 1) and insert 8 (Unit 2) for Specification 2.2.1 titled "Reactor Trip Setpoints" should be revised by deleting the word "considered" from the sentence that states the following: The Allowable values (Nominal Trip Setpoints $\pm$ the calibration tolerance) specified in Table 3.3.1 are **considered** the LSSS".

2. The Bases insert 8 (Unit1) and insert 9 (Unit 2) for Specification 3/4.3.1 and 3/4.3.2 titled "Protective and Engineered Safety Features (ESF) Instrumentation" should be revised by deleting the word "initial" from the sentence that states the following: The Allowable Values specified in Table 3.3-1 and Table 3.3-3 are the **initial** values for consideration of channel operability."

Response:

The applicable Bases Insert pages have been revised to reflect these changes and are provided in Attachment B and Attachment C for Unit 1 and Unit 2, respectively.

ATTACHMENT B to Letter L-01-088

Beaver Valley Power Station, Unit Nos. 1 and 2
License Amendment Request Nos. 286 and 158

Revised Marked Up BVPS Unit No. 1 Technical Specifications Pages

RELOCATE TO LRM

DELETE THIS PAGE

MOVE TO TABLE 3.3-1

BEAVER VALLEY - UNIT 1

(Proposed Wording)

Amendment No. 84, 155

Corrected - February 1, 1994

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION ~~TRIP SETPOINTS~~

FUNCTIONAL UNIT	NOMINAL* TRIP SETPOINT	ALLOWABLE VALUES
13. Steam Generator Water Level-Low-Low	15.1 ≥ ~~17~~% of narrow range instrument span-each steam generator	14.6 ≥ ~~10.7~~% of narrow range instrument span-each steam generator
14. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	≤ 40% of full steam flow at RATED THERMAL POWER coincident with steam generator water level ≥ 25% of narrow range instrument span-each steam generator	40.6 ≤ ~~43.4~~% of full steam flow at RATED THERMAL POWER coincident with steam generator water level 24.5 ≥ ~~23.1~~% of narrow range instrument span-each steam generator
15. Undervoltage-Reactor Coolant Pumps	75% of ~~nominal~~ bus voltage ≥ ~~2750 volts~~-each bus rated	≥ ~~2687~~ ~~volts~~-each bus 71.2% of ~~nominal~~ bus voltage rated
16. Underfrequency-Reactor Coolant Pumps	≥ 57.5 Hz - each bus	≥ 57.4 Hz - each bus
17. Turbine Trip		
A. Auto stop oil pressure	45 psig	≥ 42.9 ± ~~5~~ psig
B. Turbine Stop Valve Closure	≥ 1% open	≥ 1% open
18. Safety Injection Input from ESF	Not Applicable	Not Applicable
19. Reactor Coolant Pump Breaker Position Trip	Not Applcable	Not Applicable
20. Reactor Trip System Interlocks		
A. Intermediate Range Neutron Flux, P-6	≥ 1×10^{-10} Amps	9.0 ≥ ~~6~~ x 10^{-11} Amps

ADD

* With the exception of Functional Unit number 17.B.

RELOCATE TO LRM

DELETE THIS PAGE

TABLE 3.3-4 (Continued)

~~DPR-66~~ MOVE TO TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT (NOMINAL)	ALLOWABLE VALUES
4. STEAM LINE ISOLATION		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--Intermediate-High-High	≤ 3.0 psig	≤ ~~2.9~~ 3.3 psig
d. Steamline Pressure-Low	≥ 500 psig steam line pressure	≥ ~~480~~ 495.8 psig steam line pressure
e. High Negative Steam Pressure Rate	≤ 100 psi with a time constant ≥ 50 seconds	≤ ~~137~~ 104.2 psi with a time constant ≥ 50 seconds
5. TURBINE TRIP AND FEEDWATER ISOLATION		
a. Steam Generator Water Level High-High	≤ ~~79~~ 81.2% of narrow range instrument span each steam generator	≤ ~~76.9~~ 81.7% of narrow range instrument span each steam generator
6. LOSS OF POWER		
a. 1. 4.16kv Emergency Bus Undervoltage (Loss of Voltage) (Trip Feed)	≥ 75% of ~~nominal~~ rated bus voltage with a 1 ± 0.1 second time delay	≥ ~~72~~ 71.2% of ~~nominal~~ rated bus voltage with a 1 ± 0.1 second time delay
2. 4.16kv Emergency Bus (Start Diesel)	≥ 75% of ~~nominal~~ rated bus voltage with a < 0.9 second time delay (includes auxiliary relay times)	≥ ~~72~~ 71.2% of ~~nominal~~ rated bus voltage with a < 0.9 second time delay (includes auxiliary relay times)
b. 4.16kv Emergency Bus Undervoltage (Degraded Voltage)	≥ ~~90~~ 93.7% of ~~nominal~~ rated bus voltage with a 90 ± 5 second time delay	≥ ~~88~~ 93.4% of ~~nominal~~ rated bus voltage with a 90 ± 5 second time delay
c. 480v Emergency Bus Undervoltage (Degraded Voltage)	≥ ~~90~~ 93.7% of ~~nominal~~ rated bus voltage with a 90 ± 5 second time delay	≥ ~~88~~ 93.4% of ~~nominal~~ rated bus voltage with a 90 ± 5 second time delay

DELETE THIS PAGE

(Proposed wording)

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT (NOMINAL)	ALLOWABLE VALUES
7. AUXILIARY FEEDWATER		
a. Steam Generator Water Level-low-low	15.1 ~~≥ 17%~~ of narrow range instrument span each steam generator	14.6 ≥ ~~10.3%~~ of narrow range instrument span each steam generator
b. Undervoltage - RCP	75% ~~nominal~~ rated ≥ ~~2750 volts~~ RCP bus voltage	71.2% ~~nominal~~ ≥ ~~2687 volts~~ RCP bus voltage rated
c. S.I.	See 1 above (all SI Setpoints)	
d. ~~Emergency Bus Undervoltage~~ (Deleted)	~~≤ 3350 volts~~ DELETE	~~≤ 3325 volts~~ DELETE
e. Trip of Main Feedwater Pumps	Not Applicable	Not Applicable

RELOCATE To LRM

MOVE To TABLE 3.3-3

Attachment A-1
Beaver Valley Power Station, Unit No. 1
License Amendment Request No. 286

Insert 8

REACTOR TRIP SYSTEM INSTRUMENTATION SETPOINTS

Technical specifications are required by 10 CFR 50.36 to contain Limiting Safety System Settings (LSSS) defined by the regulation as "...settings for automatic protective devices...so chosen that automatic protective action will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytic Limit is the limit of the process variable at which a safety action is initiated, as established by the safety analysis, to ensure that a SL is not exceeded. Any automatic protection action that occurs on reaching the Analytic Limit therefore ensures that the SL is not exceeded.

The Allowable Values (Nominal Trip Setpoints ± the calibration tolerance) specified in Table 3.3.1 are ~~considered~~ the LSSS as identified in 10 CFR 50.36 and have been selected to ensure that the core and Reactor Coolant System are prevented from exceeding their safety limits during normal operation and design basis anticipated operational occurrences and to assist the Engineered Safety Features Actuation System in mitigating the consequences of accidents.

The various reactor trip circuits automatically open the reactor trip breakers whenever a condition monitored by the Reactor Trip System reaches a preset or calculated level. In addition to redundant channels and trains, the design approach provides Reactor Trip System functional diversity. The functional capability at the specified trip setting is required for those anticipatory or diverse reactor trips for which no direct credit was assumed in the safety analysis to enhance the overall reliability of the Reactor Trip System.

The Reactor Trip System initiates a turbine trip signal whenever reactor trip is initiated. This prevents the reactivity insertion that would otherwise result from excessive Reactor Coolant System cooldown and thus avoids unnecessary actuation of the Engineered Safety Features Actuation System.

The difference between T' (Overtemperature ΔT) or T" (Overpower ΔT) and the loop specific, indicated, full power T_{avg} shall be less than or equal to the T_{avg} allowances for such differences in the uncertainty calculations for these functions. In addition, T' and T" shall be less than or equal to the full power T_{avg} modeled in the safety analyses as an initial condition assumption; i.e., the numerical value specified in the COLR. In the event that the difference between a T' or T" set to the numerical value specified in the COLR and a loop specific, indicated, full power T_{avg} is greater than the T_{avg} allowances for such differences in the uncertainty calculations, T' or T" shall be reduced until the difference allowances in the uncertainty calculations are satisfied; i.e., T' or T" are set to a loop specific, full power value less than the numerical value specified in the COLR. These reductions in the values of T' and T" are consistent with the recommendations of Westinghouse Technical Bulletin ESBU-TB-96-07-RO, "Temperature Related Functions," 11/5/96.

Attachment A-1
Beaver Valley Power Station, Unit No. 1
License Amendment Request No. 286

Insert 9

3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM AND ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

The OPERABILITY of the Reactor Trip System and the Engineered Safety Features Actuation System instrumentation and interlocks ensures that: (1) the associated action and/or Reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches its setpoint, (2) the specified coincidence logic is maintained, (3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and (4) sufficient system functional capability is available from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy, and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the safety analyses. The Surveillance Requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

The Allowable Values specified in Table 3.3-1 and Table 3.3-3 are the ~~initial~~ values for consideration of channel operability. A channel is OPERABLE with a nominal trip setpoint value outside its calibration tolerance band provided the trip setpoint "as found" value does not exceed its associated Allowable Value.

Additional administratively controlled limits for operability of a device are determined by device drift being less than the value required for the surveillance interval. In the event the device exceeds the administratively controlled limit, operability of the device may be evaluated by other device performance characteristics, e.g., comparison to historical device drift data, calibration characteristics, response characteristics and short term drift characteristics. A device (relay, transmitter, process rack module, etc.), whose "as found" value is in excess of the calibration tolerance, but within the additional operability criteria (administratively controlled limit), is considered operable but must be recalibrated such that the "as left" value is within the two sided (±) calibration tolerance. Plant procedures set administrative limits ("as left" and "as found" criteria) to control the determination of operability by setting minimum standards based on the setpoint methodology and the uncertainty values included in the determination of the Nominal Trip Setpoint, and allow the use of other device characteristics to evaluate operability.

ATTACHMENT C to Letter L-01-088

Beaver Valley Power Station, Unit Nos. 1 and 2
License Amendment Request Nos. 286 and 158

Revised Marked Up BVPS Unit No. 2 Technical Specifications Pages

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BEAVER VALLEY - UNIT 2 2-5 Amendment No. 5, 27 (Proposed Wording)

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

MOVE TO TABLE 3.3-1

DELETE

FUNCTIONAL UNIT	~~ALLOWANCE (TA)~~	~~Z~~	~~S~~	NOMINAL *** TRIP SETPOINT	ALLOWABLE VALUE
13. Steam Generator Water Level-Low-Low	~~11.5~~	~~10.18~~	~~1.67~~	~~11.5~~ 16.5% of narrow range instrument span-each steam generator	~~10~~ 16 ≥ ~~10~~% of narrow range instrument span-each steam generator
14. DELETED.					
15. Undervoltage - Reactor Coolant Pumps	~~27.7~~	~~1.39~~	~~0~~	≥ 75% of ~~BUS~~ rated ~~nominal bus~~ voltage-each bus	≥ 71.2 ~~BUS~~ rated ~~nominal bus~~ voltage - each bus
16. Underfrequency-Reactor Coolant Pumps	~~10.0~~	~~0.20~~	~~0~~	≥ 57.5 Hz-each bus	≥ ~~57.4~~ 57.45 Hz-each bus
17. Turbine Trip					
a. Emergency Trip Header Low Pressure	~~N.A.~~	~~N.A.~~	~~N.A.~~	≥ 1000 psig	≥ 958 psig
b. Turbine Stop Valve Closure	~~N.A.~~	~~N.A.~~	~~N.A.~~	≥ 1% open	> 1% open
18. Safety Injection Input from ESF	~~N.A.~~	~~N.A.~~	~~N.A.~~	N.A. ADD	N.A.
19. Reactor Coolant Pump Breaker Position Trip	~~N.A.~~	~~N.A.~~	~~N.A.~~	N.A.	N.A.
20. Reactor Trip Breakers	~~N.A.~~	~~N.A.~~	~~N.A.~~	N.A.	N.A.

ADD

*** With the exception of Functional Unit number 17.b.

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BEAVER VALLEY - UNIT 2

3/4 3-26

(Proposed Mod.)

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

MOVE TO TABLE 3.3-3

FUNCTIONAL UNIT	~~TOTAL ALLOWANCE (TA)~~	~~Z~~	~~SENSOR DRIFT (S)~~	TRIP SETPOINT NOMINAL	ALLOWABLE VALUE
6. LOSS OF POWER					
a. 4.16 kV Emergency Bus 1. Undervoltage (Trip Feed)	~~15.0~~	~~1.39~~	~~0.0~~	> 75% of ~~nominal~~ Bus Voltage with a 1 ± 0.1 second time delay	71.2 > ~~75~~% of ~~nominal~~ Bus Voltage with a 1 ± 0.1 second time delay
2. Undervoltage (Start Diesel)	~~15.0~~	~~1.39~~	~~0.0~~	> 75% of ~~nominal~~ Bus Voltage, 20 cycles ± 2 cycles	71.2 > ~~75~~% of ~~nominal~~ Bus Voltage, 20 cycles ± 2 cycles
b. 4.16 kV Emergency Bus (Degraded Voltage)	~~15.0~~	~~1.39~~	~~0.0~~	93.4 > ~~90~~% of ~~nominal~~ Bus Voltage with a 90 ± 5 second time delay	93.1 > ~~90~~% of ~~nominal~~ Bus Voltage with a 90 ± 5 second time delay
c. 480 Volt Emergency Bus (Degraded Voltage)	~~15.0~~	~~1.39~~	~~0.0~~	93.4 > ~~90~~% of ~~nominal~~ Bus Voltage with a 90 ± 5 second time delay	93.1 > ~~90~~% of ~~nominal~~ Bus Voltage with a 90 ± 5 second time delay
7. AUXILIARY FEEDWATER*				rated	rated
a. Automatic Actuation Logic and Actuation Relays	~~N.A.~~	~~N.A.~~	~~N.A.~~	N.A.	N.A.

DELETE

*Manual initiation is included in Specification 3.7.1.2

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~~NPF-73~~

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

MOVE TO TABLE 3.3-3

FUNCTIONAL UNIT	~~TOTAL ALLOWANCE (TA)~~	~~Z~~	~~SENSOR DRIFT (S)~~	TRIP SETPOINT	ALLOWABLE VALUE
7. AUXILIARY FEEDWATER (Continued)				NOMINAL	
b. Steam Generator Water Level--Low-Low					
1. Start Turbine Driven Pump	~~11.5~~	~~10.10~~	~~1.67~~	≥ ~~11.5~~ (16.5)% of narrow range instrument span	≥ ~~10.7~~ (16)% of narrow range instrument span
2. Start Motor Driven Pumps	~~11.5~~	~~10.10~~	~~1.67~~	≥ ~~11.5~~ (16.5)% of narrow range instrument span	≥ ~~10.7~~ (16)% of narrow range instrument span
c. Undervoltage - RCP (Start Turbine Driven Pump)	~~27.7~~	~~1.39~~	~~0.0~~	≥ ~~75~~ (71.2)% of ~~nominal~~ (rated) bus voltage	≥ ~~75~~ (71.2)% of ~~nominal~~ (rated) bus voltage
d. Safety Injection (Start All Auxiliary Feedwater Pumps)	See Item 1. above for all Safety Injection Trip Setpoints ~~and Allowable Values~~.				
e. Trip of Main Feedwater Pumps (Start Motor-Driven Pumps)	~~N.A.~~	~~N.A.~~	~~N.A.~~	N.A.	N.A.

DELETE

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Insert 7

Technical specifications are required by 10 CFR 50.36 to contain Limiting Safety System Settings (LSSS) defined by the regulation as "...settings for automatic protective devices...so chosen that automatic protective action will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytic Limit is the limit of the process variable at which a safety action is initiated, as established by the safety analysis, to ensure that a SL is not exceeded. Any automatic protection action that occurs on reaching the Analytic Limit therefore ensures that the SL is not exceeded.

The Allowable Values (Nominal Trip Setpoints ± the calibration tolerance) specified in Table 3.3.1 are ~~considered~~ the LSSS as identified in 10 CFR 50.36 and have been selected to ensure that the core and Reactor Coolant System are prevented from exceeding their safety limits during normal operation and design basis anticipated operational occurrences and to assist the Engineered Safety Features Actuation System in mitigating the consequences of accidents.

The various reactor trip circuits automatically open the reactor trip breakers whenever a condition monitored by the Reactor Trip System reaches a preset or calculated level. In addition to redundant channels and trains, the design approach provides Reactor Trip System functional diversity. The functional capability at the specified trip setting is required for those anticipatory or diverse reactor trips for which no direct credit was assumed in the safety analysis to enhance the overall reliability of the Reactor Trip System.

The Reactor Trip System initiates a turbine trip signal whenever reactor trip is initiated. This prevents the reactivity insertion that would otherwise result from excessive Reactor Coolant System cooldown and thus avoids unnecessary actuation of the Engineered Safety Features Actuation System.

The difference between T' (Overtemperature ΔT) or T" (Overpower ΔT) and the loop specific, indicated, full power T_{avg} shall be less than or equal to the T_{avg} allowances for such differences in the uncertainty calculations for these functions. In addition, T' and T" shall be less than or equal to the full power T_{avg} modeled in the safety analyses as an initial condition assumption; i.e., the numerical value specified in the COLR. In the event that the difference between a T' or T" set to the numerical value specified in the COLR and a loop specific, indicated, full power T_{avg} is greater than the T_{avg} allowances for such differences in the uncertainty calculations, T' or T" shall be reduced until the difference allowances in the uncertainty calculations are satisfied; i.e., T' or T" are set to a loop specific, full power value less than the numerical value specified in the COLR. These reductions in the values of T' and T" are consistent with the recommendations of Westinghouse Technical Bulletin ESBU-TB-96-07-RO, "Temperature Related Functions," 11/5/96.

Attachment A-2
Beaver Valley Power Station, Unit No. 2
License Amendment Request No. 158

Insert 8

The OPERABILITY of the Reactor Trip System and the Engineered Safety Features Actuation System instrumentation and interlocks ensures that: (1) the associated action and/or Reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches its setpoint, (2) the specified coincidence logic is maintained, (3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and (4) sufficient system functional capability is available from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy, and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the safety analyses. The Surveillance Requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

The Allowable Values specified in Table 3.3-1 and Table 3.3-3 are the ~~(initial)~~ values for consideration of channel operability. A channel is OPERABLE with a nominal trip setpoint value outside its calibration tolerance band provided the trip setpoint "as found" value does not exceed its associated Allowable Value.

Additional administratively controlled limits for operability of a device are determined by device drift being less than the value required for the surveillance interval. In the event the device exceeds the administratively controlled limit, operability of the device may be evaluated by other device performance characteristics, e.g., comparison to historical device drift data, calibration characteristics, response characteristics and short term drift characteristics. A device (relay, transmitter, process rack module, etc.), whose "as found" value is in excess of the calibration tolerance, but within the additional operability criteria (administratively controlled limit), is considered operable but must be recalibrated such that the "as left" value is within the two sided (±) calibration tolerance. Plant procedures set administrative limits ("as left" and "as found" criteria) to control the determination of operability by setting minimum standards based on the setpoint methodology and the uncertainty values included in the determination of the Nominal Trip Setpoint, and allow the use of other device characteristics to evaluate operability.