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Ref: 10CFR50.90

CPSES-200500620
Log # TXX-05067

March 18, 2005

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 AND 50-446
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION TO LICENSE AMENDMENT REQUEST (LAR) 04-002: REVISION TO TECHNICAL SPECIFICATION (TS) 3.3.2 ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS) INSTRUMENTATION (TAC NO. MB2620/2621)

REF:
1) TXU Energy letter logged TXX-04049 from Mike Blevins to the NRC dated April 13, 2004
2) NRC letter from Mohan C. Thadani to Michael R. Blevins dated February 16, 2005
3) NRC memorandum from Margaret V. Federline to William D. Travers dated January 15, 1999.
4) NRC memorandum from William D. Travers to Samuel J. Collins dated February 16, 1999.
5) Letter from Alexander Marion, Nuclear Energy Institute, to James E. Lyons, Deputy Director, Division of Licensing Project Management dated March 18, 2005

Gentlemen:

In reference 1 above, TXU Generation Company LP (TXU Power) transmitted an application for amendment (Reference 1) to Facility Operating License Number NPF-87 and NPF-89 for CPSES Unit 1 and Unit 2. The proposed amendment would revise the trip setpoint allowable value for Refueling Water Storage Tank Level Low-Low (ESFAS function 7.b) for Unit 2 to be the same as for Unit 1. This change would also revise the frequency for calibration of the RWST water level transmitters for both units from 9 months to 18 months.

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After reviewing the proposed license amendment, the NRC staff requested additional information in Reference 2 to support the amendment application. A telephone conference call was conducted on February 3, 2005 to discuss the requested information during which TXU Power agreed to provide responses to the staff's questions by March 11, 2005. In a subsequent telephone conversation between TXU Power and the NRR Project Manager, this was revised to March 18, 2005. The attachment to this letter provides TXU Power's response to the Staff's request for additional information in support of TXU Power's amendment application.

However, as part of a proposed generic resolution to the issues pertaining to the use of the Instrumentation, Systems, and Automation Society (ISA) Standard, ISA 67.04, Part II, Method 3, the Nuclear Energy Institute, in Reference 5, has requested that the NRC staff withdraw Requests for Additional Information (RAIs) on license amendment requests (LARs) that involve instrument setpoints that are based on ISA Method 3. TXU Power intends to conform to the industry resolution of this issue in any future submittals involving setpoints.

The additional information provided in the attachment does not impact the conclusions of the No Significant Hazards Consideration provided in Reference 1. In accordance with 10 CFR 50.91, a copy of this submittal is being provided to the designated Texas State official.

This communication contains no new licensing basis commitments regarding CPSES Units 1 and 2.

Should you have any questions, please contact Robert A. Slough at (254) 897-5727.

I state under penalty of perjury that the foregoing is true and correct.

Executed on March 18, 2005.

Sincerely,

TXU Generation Company LP

By: TXU Generation Management Company LLC
Its General Partner

Mike Blevins

By: 
Fred W. Madden
Director, Regulatory Affairs

RAS
Attachment

c - B. S. Mallett, Region IV
W. D. Johnson, Region IV
M. C. Thadani, NRR
D. H. Jaffe, NRR
Resident Inspectors, CPSES

Ms. Alice Rogers
Bureau of Radiation Control
Texas Department of Public Health
1100 West 49th Street
Austin, Texas 78756-3189

REQUEST FOR ADDITIONAL INFORMATION

RE: THE REVIEW OF REQUEST FOR REVISION OF TECHNICAL SPECIFICATION 3.3.2
(TAC NOS. MC2620 AND MC2621)

Question 1:

Please provide setpoint calculation document of the refueling water storage tank (RWST) level low-low (TS 3.3.2, Function 7.b) protection function which has allowable value revised for this license amendment request.

Question 1 Response:

The setpoint calculation document for the revised Refueling Water Storage Tank (RWST) Level Low-Low function (TS 3.3.2, function 7.b) will be made available for review by the NRC staff. TXU Power will forward the setpoint calculation document to Mr. Rich Luckett (202-739-8058) at the Nuclear Energy Institute. He will then make arrangements for your review of the document.

Question 2:

The CPSES Units 1and 2 Technical Specifications (TSs) define Limiting Safety 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 AVs identified in the TSs. 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 concerns relate 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 staff has determined that, absent additional requirements related to determining the operability of the instrument channel, AVs associated with LSSS established by means of ISA-RP67.04, Part II, Method 3, will not provide reasonable assurance that a plant will operate in accordance with the assumptions upon which the plant safety analyses have been based. Details about the NRC staff's concerns are available on the NRC's public website under ADAMS Accession Numbers ML041690604 and ML041810346.

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 CPSES, Units 1 and 2, 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 CPSES, Units 1 and 2:

a. Discuss how the methodology and controls you have in place ensure that the analytical limit associated with an LSSS trip setpoint will not be exceeded (that 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 CPSES, Units 1 and 2 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. Specifically, relate the surveillance test results to the TS AV and describe how these are used to determine the operability 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.

Question 2 Response:

The setpoint methodology used at CPSES to establish Allowable Values associated with Limiting Safety System Settings (LSSS) is described in the CPSES Final Safety Analysis Report (FSAR), section 7.1.2.1.9, as follows:

"7.1.2.1.9 Bistable Trip Setpoints

The setpoint methodology is basically the square root of the sum of the squares (SRSS) of the statistically independent parameters. Dependent parameters are arithmetically summed prior to systematic combination with other terms. The total combination of error terms is identified as the channel statistical allowance (CSA).

Three values applicable to reactor trip and engineered safety features actuation are specified:

1. Safety Analysis limit

2. Nominal Safety System Setting

3. Limiting Safety System Setting

The safety analysis limit is the value assumed in the accident analysis and is the least conservative value.

The nominal safety system setting is the technical specification "Trip Setpoint" and is determined by subtracting the channel's "total allowance" (Total Allowance = CSA + Margin) from the safety analysis limit.

The limiting safety system setting is the technical specification "allowable value" and a setpoint exceeding this value indicates that a channel may be inoperable. The allowable value is determined by either adding the arithmetic sum of the error components encountered during periodic surveillances (including drift) to the nominal safety system setting or by subtracting the sum of margin plus a statistical combination of channel error terms except those encountered during periodic surveillances from the safety analysis limit. The most conservative result is used as the allowable value.

The trip setpoint is determined by factors other than the most accurate portion of the instrument's range. The safety analysis limit setpoint is determined only by the accident analysis. As described above, allowance is then made for process uncertainties, instrument error, instrument drift, and calibration uncertainty to obtain the nominal setpoint value which is actually set into the equipment. The only requirement on the instrument's accuracy value is that over the instrument span, the error must always be less than or equal to the error value allowed in the accident analysis. The instrument does not need to be the most accurate at the setpoint value as long as it meets the minimum accuracy requirement. The accident analysis accounts for the expected errors at the actual setpoint.

Range selection for the instrumentation covers the expected range of the process variable being monitored consistent with its application. The design of the reactor protection and engineered safety features systems is such that the bistable trip setpoints do not require process transmitters to operate within 5 percent of the high and low end of their calibrated span or range. Functional requirements established for every channel in the reactor protection and engineered safety features systems stipulate the maximum allowable errors on accuracy, linearity, and reproducibility. The protection channels have the capability for, and are tested to ascertain that the characteristics throughout the entire span in all aspects are acceptable and meets functional requirement specifications. As a result, no protection channel operates normally within 5 percent of the limits of its specified span.

In this regard, it should be noted that the specific functional requirements for response time, setpoint, and operating span is finalized based on the plant specific safety studies. Emphasis is placed on establishing adequate performance requirements under both normal and faulted conditions. This includes consideration of process transmitters margins such that even under a highly improbable situation of full power operation at the limits of the operating map (as defined by the high and low pressure reactor trip, N-16 Overpower and Overtemperature trip lines (DNB protection) and the steam generator safety valve pressure setpoint) that adequate instrument response is available to ensure plant safety."

In addition, the Bases for CPSES Units 1 and 2 Technical Specification 3.3.2 states the following:

BACKGROUND

"...The Allowable Value in conjunction with the trip setpoint and LCO establishes the threshold for ESFAS action to prevent exceeding acceptable limits such that the consequences of Design Basis Accidents (DBAs) will be acceptable.

The Allowable Value is considered a limiting value such that a channel is OPERABLE if the setpoint is found not to exceed the Allowable Value during the CHANNEL OPERATIONAL TEST (COT). Note that, although the channel is OPERABLE under these circumstances, the ESFAS setpoint must be left adjusted to a value within the established calibration tolerance band of the ESFAS setpoint in accordance with the uncertainty assumptions stated in the referenced setpoint methodology (as-left criteria), and confirmed to be operating within the allowances of the uncertainty terms assigned."

[Note: The "referenced setpoint methodology" referred to above is "Westinghouse Setpoint Methodology for Protection Systems Comanche Peak Unit 1, Revision 1," WCAP-12123, Revision 2, April, 1989.]

FIELD TRANSMITTERS OR SENSORS

"... To account for calibration tolerances and instrument drift, which are assumed to occur between calibrations, statistical allowances are provided in the Trip Setpoint and Allowable Values is determined by either "as-found" calibration data evaluated during the CHANNEL CALIBRATION or by qualitative assessment of field transmitter or sensor as related to the channel behavior observed during performance of the CHANNEL CHECK."

ALLOWABLE VALUES AND TRIP SETPOINTS

"The trip setpoints used in the bistables are based on the analytical limits stated in Reference 3. [CPSES FSAR, Chapter 15] The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those ESFAS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 5), the Allowable Values specified in Table 3.3.2-1 in the accompanying LCO are conservative with respect to the analytical limits. Detailed descriptions of the methodologies used to calculate the trip setpoints, including their explicit uncertainties, are provided in the setpoint calculations. The methodology to derive the trip setpoints is based upon combining all of the uncertainties in the channels. The essential elements of the methodology are described in Reference

9. ["Westinghouse Setpoint Methodology for Protection Systems Comanche Peak Unit 1, Revision 1," WCAP-12123, Revision 2, April, 1989.]

Changes in accordance with this methodology have been reviewed by the staff in the original Unit 2 Technical Specifications and in several subsequent license amendments (e.g., amendments 21/7 and 22/8 to the Unit 1/Unit 2 Technical Specifications). The actual nominal ESFAS setpoint entered into the bistable is more conservative than that specified by the Allowable Value to account for changes in random measurement errors detectable by a COT. The Allowable Value serves as the Technical Specification operability limit for the purpose of the COT. One example of such a change in measurement error is drift during the surveillance interval. If the measured setpoint does not exceed the Allowable Value, the bistable is considered OPERABLE.

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

The ESFAS setpoint is the value at which the bistable is set and is the expected value to be achieved during calibration. The ESFAS setpoint value ensures the safety analysis limits are met for the time period of the surveillance interval when a channel is adjusted based on stated channel uncertainties. Any bistable is considered to be properly adjusted when the "as left" setpoint value is within the band for CHANNEL CALIBRATION uncertainty allowance (i.e., ± rack calibration + comparator setting uncertainties). The ESFAS setpoint value of Table B3.3.2-1 is therefore considered a "nominal" value (i.e., expressed as a value without inequalities) for the purposes of COT and CHANNEL CALIBRATION."

APPLICABLE SAFETY ANALYSIS, LCO, and APPLICABILITY

"A channel is OPERABLE with a setpoint value outside its calibration tolerance band provided the trip setpoint "as-found" value does not exceed its associated Allowable Value and provided the trip setpoint "as-left" value is adjusted to a value within the calibration tolerance band of the Nominal Trip Setpoint. A trip setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions."

Reference 3 documents the conclusions and recommendations of an ad hoc panel appointed by the Executive Director for Operations in 1998 to review the facts and circumstances of a differing professional opinion (DPO) regarding Technical Specification setpoints and allowable values for instrumentation. With regard to the use of the Trip Setpoints vs. Allowable Values in the Technical Specifications in order to meet the requirements of 10 CFR 50.36 for specifying the Limiting Safety System Settings, Reference 3 states the following on page 3 of the attached report:

> "The panel was advised by OGC [Office of the General Counsel] that while the use of TSP [trip setpoint] is one clear way of fulfilling the requirement, it may be possible to conclude, from a technical standpoint, that other approaches such as allowable values could be used (Attachment 2). After a review of the technical aspects of this issue...the panel concluded that if a trip occurs at the allowable value, or a setting more conservative than the allowable value, the applicable safety limit will not be exceeded. Thus, it is possible to justify the use of AV [allowable value] to satisfy the requirement that the TS include the LSSS"...
>
> "For plants with the improved standard technical specifications, the setpoint methodology is a reference in the TS "Bases". At operating plants, licensees may commit to setpoint methodologies in the Final Safety Analysis Report or licensee reports with or without a staff Safety Evaluation Report. Furthermore it is understood that licensees may make changes to the setpoint methodology under plant procedures without approval of the NRC. The requirements of 10 CFR 50.59 will apply to such changes at some plants, but not at others depending upon what commitments have been made by the licensee and how the licensee has documented the setpoint methodology".

In its conclusions, the ad hoc panel stated that the staff's current approach of including allowable values in Improved Standard Technical Specifications (ISTS) to satisfy the requirements of 10 CFR 50.36 was technically adequate but recommended that the bases section of future plant ISTS be written to provide a clear basis for accepting allowable values as the LSSS required by 10 CFR 50.36. In Reference 4, the Executive Director of Operations stated his agreement with the conclusions and recommendations of the ad hoc panel. This recommendation was subsequently incorporated in the ISTS Bases and in the CPSES TS Bases as shown earlier.

The Westinghouse setpoint methodology application to CPSES Unit 1 is summarized in WCAP-12123 and was reviewed by the NRC prior to issuing the Unit 1 Operating License. This review is documented on page 7-7 of NUREG-0797, "Safety Evaluation Report related to the operation of Comanche Peak Steam Electric Station, Units 1 and 2, Docket Nos. 50-445 and 50-446", Supplement No. 22. This setpoint methodology was used in the calculation of the Reactor Trip System (RTS) and Engineered Safety Features Actuation System (ESFAS) setpoints for the CPSES Unit 1 Technical Specifications. TXU Power applied this methodology in the calculation of the RTS and ESFAS setpoints which were approved for incorporation into the original CPSES Unit 2 Technical Specifications and also into past revisions to the CPSES Unit 1 and 2 Technical Specifications including License Amendment 64 which implemented the Improved Standard Technical Specifications for CPSES. Other CPSES licensing actions which have involved the review and acceptance of our application of the setpoint methodology as described in WCAP-12123 include License Amendments 56/42, 64, and 73 to the combined CPSES Unit 1 and 2 TSs.

Compliance with the provisions of 10CFR 50.59(c)(2)(viii) dictates that all deviations from the setpoint methodology described in WCAP-12123 would require NRC review and approval prior to implementation. As noted on page 3 of 6 in Attachment 1 to TXX-04049, TXU Power applied

the same, previously reviewed and approved, methodology to the calculation of the new, proposed setpoint for RWST Level Low-Low (ESFAS function 7.b) for Unit 2.

In summary, TXU Power believes that the controls described above in the CPSES FSAR and TS Bases, along with the provisions of 10 CFR 50.59, are adequate to satisfy the requirements of 10 CFR 50.36. These provisions have been extensively reviewed and accepted by the NRC through other, previous and numerous licensing actions. Furthermore, we believe this position has been reviewed and endorsed by the NRC as documented in Reference 3 and concurred with by the Executive Director for Operations as stated in Reference 4.

In addition, Reference 5 documents the results of a meeting between the NEI Setpoint Methods Task Force (SMTF) and the NRC staff on March 11, 2005. As stated in that letter, "although consensus on the acceptability of Method 3 was not achieved during the meeting, both the NRC and SMTF representatives expressed the opinion that a generic, method-independent resolution is feasible." TXU Power will conform to the industry resolution of this issue in any future submittals involving setpoints.

Question 3:

The licensee's submittal indicated that Veritrak transmitters were replaced by Rosemount transmitters for the RWST level measurement. Are there any other Veritrak transmitters still serving safety-related function?

Question 3 Response:

TXU Power does not understand the relevance of this question to the requested license amendment. However, there are fourteen (14) other Veritrak transmitters currently in service for other safety-related functions at CPSES. Three (3) Veritrak transmitters per Reactor Coolant System (RCS) loop on Unit 1 are used for RCS loop flow measurement (total of twelve 12 in this application). In addition, one Veritrak transmitter is used on each Unit (1 and 2) for measurement of RCS Wide Range Pressure.