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10CFR50.36

September 10, 1992

William J. Cahill, Jr.
Group Vice President

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)- UNIT 1
DOCKET NOS. 50-445
SUBMITTAL OF LICENSE AMENDMENT REQUEST 92-04
UNDERVOLTAGE AND UNDERFREQUENCY CHANGES TO
TABLE 2.2-1 OF THE UNIT 1 TECHNICAL SPECIFICATIONS

Gentlemen:

Pursuant to 10CFR50.90, TU Electric hereby requests an amendment to the CPSES Unit 1 Operating License (NFP-87) by incorporating the enclosed changes into the CPSES Unit 1 Technical Specifications.

In general, the proposed changes revise the CPSES Unit 1 Technical Specifications by changing the "Z" value of Table 2.2-1 for the Undervoltage (UV) relay and by changing the allowable value of Table 2.2-1 for the Underfrequency (UF) relay. These changes are required to incorporate a previously unaccounted for uncertainty in the UV relay setpoint calculations, and to provide relief to maintenance personnel in setting the UF setpoint.

Attachment 2 provides a detailed description of the proposed change, the basis for the change, a safety analysis of the change, and TU Electric's determination that the proposed change does not involve a significant hazards consideration. Attachment 3 provides the affected Technical Specification pages (NUREG-1399), marked-up to reflect the proposed change. Attachment 4 provides a copy of TU Electric Reactor Engineering Calculation; "RXE-TA-CP1/0-027 Rev. 1."

The analysis performed to support the proposed change demonstrates that neither the change in "Z" value for the Undervoltage relay or the requested change in "Allowable Value" for the Underfrequency relay are a safety concern, and that CPSES Unit 1 is in full compliance with regulations. TU Electric requests that the approval transmittal for this proposed amendment include a 30 day implementation period following the date of issuance.

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PDR

400 N. Olive Street L.B. 81 Dallas, Texas 75201

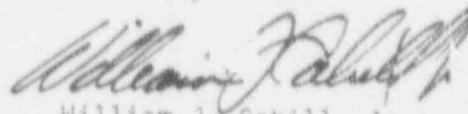
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In accordance with 10CFR50.91(b), TU Electric is providing the State of Texas with a copy of this proposed amendment.

Should you have any questions, please contact Mr. Jose' D. Rodriguez at (214) 812-8674.

Sincerely,


William J. Cahill, Jr.

JDR/

Attachments: 1. Affidavit
2. Description and Assessment
3. Affected Technical Specification pages (NUREG-1399)
4. RXE-TA-CP1/0-027 Rev. 1

c - Mr. J. L. Milhoan, Region IV
Mr. B. E. Holian, NRR
Mr. T. A. Bergman, NRR
Resident Inspectors, CPSES (2)

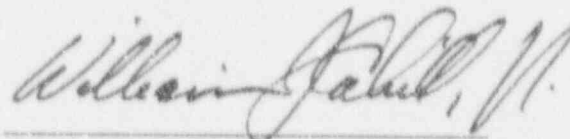
Mr. D. K. Lacker
Bureau of Radiation Control
Texas Department of Public Health
1100 West 49th Street
Austin, Texas 78704

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
Texas Utilities Electric Company)	Docket Nos. 50-445
)	
(Comanche Peak Steam Electric)	License No. NFP-87
Station, Unit 1))	

AFFIDAVIT

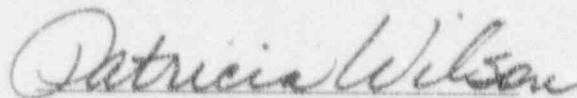
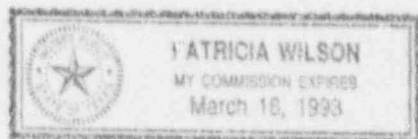
William J. Cahill, Jr. being duly sworn, hereby deposes and says that he is Group Vice President, Nuclear of TU Electric, the lead Applicant herein; that he is duly authorized to sign and file with the Nuclear Regulatory Commission License Amendment Request 92-04, "Undervoltage and Underfrequency Changes to Table 2.2-1 of the CPSES UNIT 1 Technical Specifications"; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.



William J. Cahill, Jr.
Group Vice President, Nuclear

STATE OF TEXAS)
)
COUNTY OF SOMERVELL)

Subscribed and sworn to before me, on this 10th day of September, 1992.


Notary Public

DESCRIPTION AND ASSESSMENT

BACKGROUND

Protection for a total loss of flow in the Reactor Coolant System (RCS) is provided by Reactor Coolant Pump (RCP) Bus undervoltage (UV) and underfrequency (UF) reactor trips. The RCP voltage and frequency are monitored by UV and UF relays connected at the pump side of the RCP breakers. The nominal UV and UF trip points are set at 80.5 V and 57.2 Hz. The relay settings correspond to a bus voltage and frequency of 4830 V and 57.2 Hz. The basis and methodology for calculating the setpoints are found in Westinghouse document WCAP-12123¹, Rev. 1: "Westinghouse Setpoint Methodology for Protection Systems Comanche Peak Unit 1." The bus UV and UF trip points are listed in the Unit 1 Technical Specifications Table 2.2.1, in station document E1-2400: "Protective Devices Settings Document," and in station document E1-2700: "Precautions Limitations and Setpoints Document."

A review and comparison of documents uncovered a discrepancy in the adjustment tolerances allowed for the UV and UF relays. The calibration allowances in WCAP-12123 are given as $\pm 1.4\%$ of span for the UV relay and $\pm 0.7\%$ of span for the UF relay.² The calibration allowances translated to equivalent relay adjustment tolerances of 80.08 V to 80.92 V for the UV relay and 57.17 Hz to 57.23 Hz for the UF relay. The specified relay adjustment tolerances in

¹ WCAP-12123 was transmitted to the NRC as an enclosure to TU Electric Letter logged TXX-89205 from William J. Cahill, Jr. to NRC dated May 10, 1989.

² WCAP-12123 assumes a Rack Calibration Accuracy of 0.7 % of span, a Rack Measuring and Test Equipment Accuracy of 0.7 % of span, and a Rack Drift of 0.7 % of span in calculating the Channel Statistical Allowance for the UF relay. The Reactor Engineering Calculation: "RXE-TA-CP1/0-027, Rev. 1" assumes a Rack Calibration Accuracy of 1.0 % of span, a Rack Measuring and Test Equipment Accuracy of 0.34 % of span, and a Rack Drift of 0.67 % of span in calculating the Channel Statistical Allowance for the UF relay. Both documents calculate the Channel Statistical Allowance at 2.1 % of span. The Reactor Engineering calculation allows a larger UF relay calibration allowance by limiting the amount of drift allowed and requiring greater accuracy (4:1) in the Measuring and Test Equipment.

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station document E1-2400 were given as 79.29 V to 81.70 V for the UV and 57.1 Hz to 57.31 Hz for the UF relays. The E1-2400 relay adjustment tolerances translated to calibration tolerances of $\pm 4\%$ of span for the UV and $\pm 2.22\%$ of span for the UF relays. The tolerances in WCAP-12123 were used by Westinghouse in determining the values of Table 2.2.1 of the Technical Specifications. A review of surveillance records for the UV and UF trip functions revealed that all "as-found" values and the latest "as-left" value were within the more restrictive WCAP-12123 tolerances. E1-2400 was revised to agree with the WCAP-12123. The review of documentation to resolve the differences in tolerances showed that the potential transformer, which reduces bus voltage for monitoring, had an uncertainty of 0.3 % that had not been considered in the original setpoint study.

During the review, maintenance personnel stated that adjusting the UF relay within such a narrow tolerance was difficult. The UF relay is an integral part of the rack, and any relaxation of the tolerance would be reflected on the Rack Calibration Accuracy (RCA) term used in the setpoint methodology.

Description of Technical Specification Change Request

This amendment proposes to change CPSES Unit 1 Technical Specification Table 2.2.1 "Reactor Trip System Instrumentation Trip Setpoints," item 14 "Undervoltage: Reactor Coolant Pump" and item 15 "Underfrequency: Reactor Coolant Pump." The proposed amendment to the Technical Specifications will change the "Z" value in Table 2.2.1 for the Undervoltage Relay (item 14) from the current 0.0 % to 1.2 % of span. The proposed amendment will also change the "Allowable Value" entry in Table 2.2.1 for the Underfrequency Relay (item 15) from the current 57.1 Hz to 57.06 Hz.

IV

The UV relay senses RCP Bus voltage through a potential transformer. The potential transformer has a primary to secondary winding ratio of 60:1 (7200V:120V) with an uncertainty of 0.3 %. The primary to secondary winding ratio and the associated uncertainty translates to an output voltage, with a 7.2 KV input, of 120 V ± 0.36 V or $\pm 1.2\%$ of span. Incorporating the potential transformer uncertainty changes the Primary Element Accuracy (PEA) of the Westinghouse Setpoint Methodology from 0.0 % to 1.2 % span. The "Z"

DESCRIPTION AND ASSESSMENT

value of Table 2.2.1 of the Technical Specifications is defined in the BASES of the Technical Specifications as being the statistical sum³ of the errors assumed in the analysis excluding those associated with the sensor and rack drift as well as the accuracy of their measurement. WCAP-12123 calculates the "Z" value as the sum of the sensor environmental allowance plus the SRSS of the process measurement accuracy, the primary element accuracy, the sensor temperature effects, the sensor pressure effects, and the rack temperature effects (see figure 1). The "Z" term in Table 2.2.1 of the Technical Specifications for item 14 is changed from 0 % to 1.2 % of span. The Channel Statistical Allowance (CSA) for the UV trip, which uses the same terms as the "Z" term, also changes. The changed CSA is still below the Total Allowance of 7.7 % of span which is listed in Table 2.2.1.

UF

The UF relay monitors the RCP bus frequency and provides backup protection to the UV trip on a complete loss of flow. Westinghouse, in WCAP-12123 assumes that the UF relay is an integral part of the instrument rack and treats the uncertainties as part of the rack uncertainties. Relaxing the UF relay adjustment tolerance from 1 % to 2 % of span will change the various terms used in determining the Channel Statistical Allowance (see figure 2). From the attached TU Electric Reactor Engineering Calculation; "RXE-TA-CP1/0-027, Rev. 1," relaxing the relay adjustment tolerance changes the Rack Calibration Accuracy (RCA) from 1 % to 2 %, the Rack Measuring and Test Equipment (RMTE) allowance from 0.34 % to 0.5 %, and the Channel Statistical Allowance (CSA) from 2.01 % to 3.17 %. The Allowable Value⁴ of Table 2.2.1 of the Technical

³Westinghouse uses the square root of the sum of the squares (SRSS) as the basic methodology for calculating the loop uncertainty associated with the various component variables.

⁴WCAP-12123 discusses the "Allowable Value" and the "trigger" values that are used in its calculation. The first trigger value T1, is the arithmetic sum of the instrument loop uncertainties encountered during calibration plus the nominal safety system setpoint. The second T2, is the difference between the SRSS of the uncertainties for which there is no periodic surveillance plus the square of the sum of the sensor parameters and the Safety Analysis Limit. The Allowable Value is the more conservative result of the above calculations. For the underfrequency allowable value, T1 dominates and is used in the calculation.

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specifications is defined in WCAP-12123 as the nominal setpoint plus the arithmetic sum of the instrument uncertainties (ie., rack drift, rack temperature effects, measuring and test equipment allowance, and the rack calibration accuracy). The change in UF relay tolerance, from 1 % to 2 % of span results in an Allowable Value change to Table 2.2.1 of the Technical Specifications for item 15 from 57.1 Hz to 57.06 Hz. Although the Allowable Value for the UF relay is closer to the Nominal setpoint assumed in the accident analysis and the CSA increases from 2.01 % to 3.17 % of span, the Total Allowance (TA)⁵, at 4.4 % of span, is still greater than the CSA.

In summary, the addition of the potential transformer uncertainty into the UV relay calculations changes the "Z" value listed in Table 2.2.1 of the Technical Specifications for item 14 from 0.0 to 1.2 % of span. Relaxing the tolerance for the UF relays from 1 % to 2 % of span changes the "Allowable Value" column of Table 2.2.1 of the Technical Specifications for item 15 from 57.1 Hz to 57.06 Hz.

ANALYSIS

The amendment request proposes to change the "Z" value of Table 2.2.1 of the Technical Specifications for the UV relay from the current 0.0 % to 1.2 % of span, and to change the "Allowable Value" of Table 2.2.1 of the Technical Specifications for the UF relay from the current 57.1 Hz to 57.06 Hz. The changes are necessary to incorporate a previously overlooked uncertainty of 0.3 % for the UV relay potential transformer and to provide relief to maintenance personnel who are having a difficult time setting the UF relay within the present calibration tolerance of +/- 1 % by relaxing the calibration tolerances to +/- 2 % of span.

The relays monitor the RCP electrical supply, downstream of the breaker on the pump side. In assessing the safety impact of the proposed amendment on the plant, various documents were reviewed: the Reactor Engineering Calculation "RXE-TA-CP1/0-027 Rev. 1;" E1-2700; "Precautions Limitations and Setpoint Document;" WCAP-12123 Rev. 1; "Westinghouse Setpoint Methodology for Protection Systems Comanche Peak Unit 1;" E1-2400; "Protective Devices

⁵Total Allowance is defined in the Technical Specification BASES as the difference between the Safety Analysis Limit and the Nominal Setpoint, both of which are unchanged.

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Settings Document;* the BASES section of the Technical Specification; and FSAR Section 15.3.2, "Complete loss of Forced Reactor Coolant Flow." The review concluded that the proposed changes to the Technical Specifications do not change the operating setpoints or any other operating parameters of the relays nor do they introduce any physical changes to UV/UF monitoring circuits. The proposed change introduces no credible potential failures into the RCS or Electrical Distribution System.

The review of Section 15.3.2 of the FSAR shows that the nominal setpoint assumed in the accident analysis for the UF trip point of 57.0 Hz is not changed by this amendment request, thus the accident analysis is not affected. Since the assumptions and results of the analysis of a "Complete Loss of Reactor Coolant Flow" are unchanged, the radiological consequences and the probability of occurrence remain unchanged. The proposed changes affect only the assumed uncertainties of the UV and UF monitoring relays. Because there are no physical or setpoint changes to the relays and because there are no credible failure modes or malfunctions introduced into the systems they monitor, the possibility of a new and unanalyzed type of event is unchanged. The margin of safety remains unaffected because neither the nominal setpoint nor the assumptions used in the accident analysis are changed.

In summary, this change does not constitute an unreviewed safety question but it does involve a change to the technical specifications which are an attachment to the operating license.

Significant Hazards Consideration Determination

- (1) Does the proposed revision involve a significant increase in the probability or consequences of an accident previously evaluated in the Safety Analyses Report?

As stated above, the proposed change to Table 2.2.1 of the Technical Specifications does not involve an increase in the probability of an accident previously evaluated in the Safety Analyses Report.

DESCRIPTION AND ASSESSMENT

UV

The accident analysis of FSAR Section 15.3.2: "Complete Loss of Forced Reactor Coolant Flow" is not impacted by the change in "Z" value for the UV trip. The change in "Z" value for the UV relay does not change the operating setpoints or any other operating parameters of the relays. The change does not introduce any physical changes to UV monitoring circuits, thus there are no new credible potential failures that can be introduced into the RCS or Electrical Distribution System. The change does not introduce failures which result in a decrease in Reactor Coolant Flow. The change does not alter the probability of occurrence of a complete loss of forced reactor coolant flow. The change does not alter the time sequence of events for incidents which result in a decrease in Reactor Coolant system flow rates of Table 15.3.1, nor does it alter the transient curves of Figure 15.3.12-A and 15.3.9-A. The change does not alter the consequences of a complete loss of forced reactor coolant flow.

UF

The accident analysis, of FSAR Section 15.3.2: "Complete Loss of Forced Reactor Coolant Flow" states that the UF trip serves as a backup for the UV trip. The change does not introduce any physical changes to UV monitoring circuits, thus there are no credible potential failures that can be introduced into the RCS or Electrical Distribution System. The change to the Allowable Value will not result in a decrease in Reactor coolant flow. The change does not alter the probability of a Complete Loss of Forced Reactor Coolant Flow from occurring. This request proposes to change the Allowable Value for the UF trip. The actual trip point would still be more conservative than the 57.0 Hz which is mentioned in section 15.3.2 of the FSAR. The accident analysis does not use the UF trip in the transient analysis for a Complete Loss of Forced Reactor Coolant Flow. The change to the Allowable value does not alter the time sequence of events of Table 15.3.1, nor does it alter the transient curves of Figure 15.3.12-A and 15.3.9-A. The change does not alter the consequences of a complete loss of forced reactor coolant flow.

- (2) Does the proposed revision create the possibility of a new or different kind of accident from any previously analyzed?

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The proposed changes to the UV and UF trip data of Table 2.2.1 of the Technical Specifications do not introduce any credible failure or accident modes into the RCS, the RCP, or Electrical distribution systems. The proposed changes do not create the possibility of a new or different type of accidents not previously analyzed.

- (3) Does the proposed revision involve a significant reduction in the margin of safety?

The margin of safety is defined as the difference between a regulated acceptance criterion and the failure point for a particular parameter. Neither the UV or UF trip data changes affect the assumptions or results of the safety analysis. The conclusions of the safety analysis are not affected by the proposed changes. The proposed changes do not impact any failure points in the RCS, RCP, or Electrical Distribution System. The Margin of Safety is not reduced.

In conclusion, the proposed technical specification changes to the CPSES Unit Technical Specification Table 2.2.1, "Reactor Trip System Instrumentation Trip Setpoints," item 14 "Undervoltage: Reactor Coolant Pump" and item 15 "Underfrequency: Reactor Coolant Pump" do not involve a significant hazard consideration.

ENVIRONMENTAL EVALUATION

10 CFR 51.22(b) specifies the criteria for categorical exclusions from the requirement for a specific environmental assessment per 10 CFR 51.21. This amendment request meets the criteria specified in 10 CFR 51.22(c)(9). Specific criteria contained in this section are discussed below.

- (i) the amendment involves no significant hazards consideration

As demonstrated in the Significant Hazards Consideration Determination the requested license amendment does not involve any significant hazards considerations.

- (ii) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

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The requested license amendment involves no change to the facility and does not alter the manner of operation of the relays in a way which could cause an increase in the amounts of effluents or create new types of effluents.

(iii) there is no significant increase in individual or cumulative occupational radiation exposure

The proposed changes do not impact plant design features or operations that affect radiation protection, radioactive effluent processing, radioactive waste handling, or radiological environmental monitoring. The changes do not result in additional exposure by personnel nor affect levels of radiation present. The proposed changes do not result in significant individual or cumulative occupational radiation exposure.

Based on the above, it is concluded that there will be no impact on the environment resulting from this change and the change meets the criteria specified in 10 CFR 51.22 for a categorical exclusion from the requirements of 10 CFR 51.21 relative to a specific environmental impact statement or environmental assessment by the Commission.

REFERENCES

E1-2700; "Precautions Limitations and Setpoint Document"

WCAP-12123 Rev. 1; "Westinghouse Setpoint Methodology for Protection Systems
Comanche Peak Unit 1."

E1-2400; "Protective Devices Settings Document."

Reactor Engineering Calculation; "RXE-TA-CP1/0-027 Rev. 1."

FSAR Section 15.3.2; "Complete loss of Forced Reactor Coolant Flow."

UNDervOLTAGE

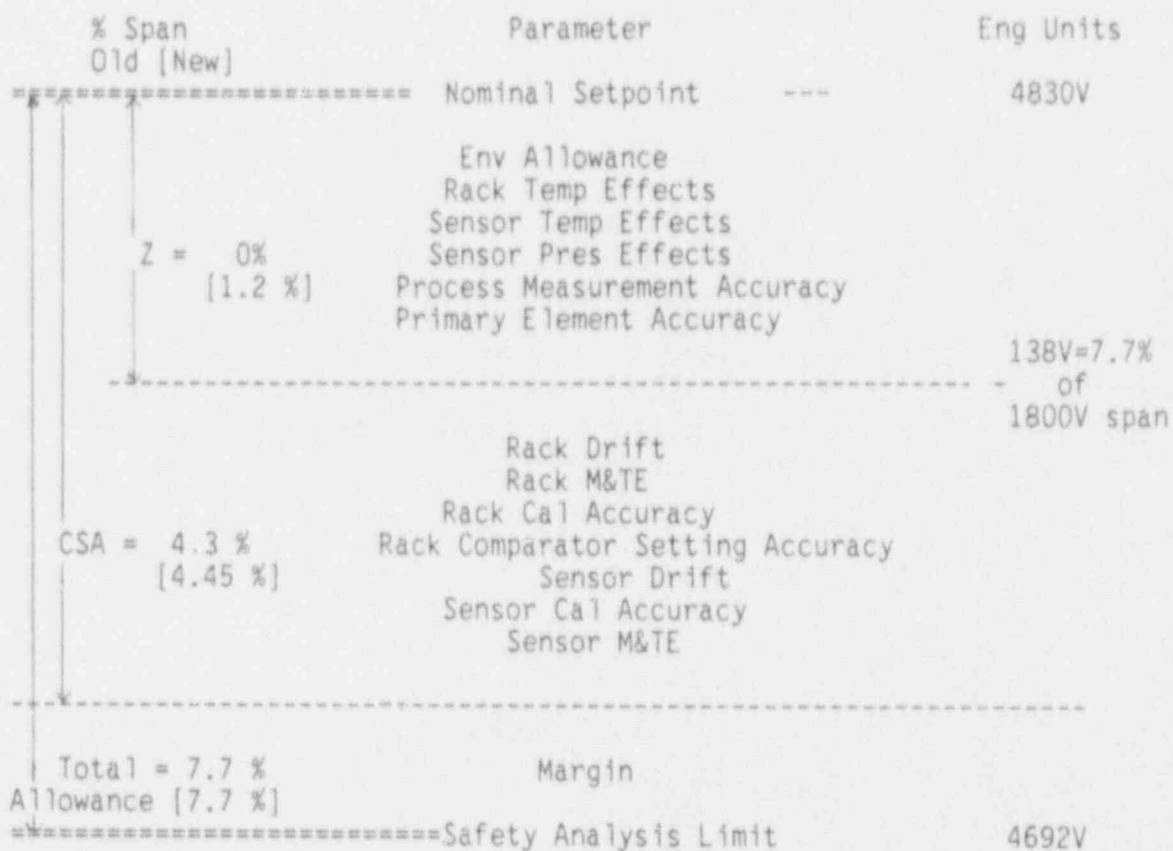


FIGURE 1

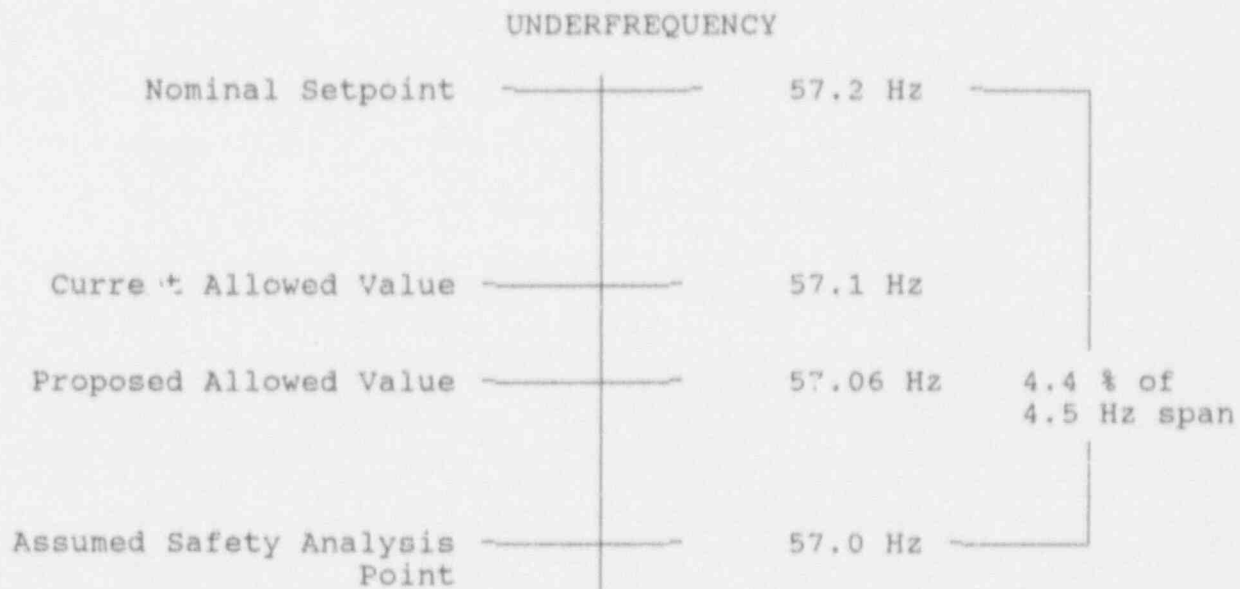


Figure 2