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10CFR50.55a(f)(i,ii)

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U. S. Nuclear Regulatory Commission
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Subject: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES) - UNITS 1 AND 2
DOCKET NOS. 50-445 AND 50-446
REQUEST FOR EXEMPTION FROM 10CFR50.55a(f)(4)(i) AND (ii)
FOR INSERVICE TESTING (IST) PROGRAM (TESTING FREQUENCY),
(1989 EDITION OF ASME CODE, SECTION XI, NO ADDENDA,
INTERVAL START DATE: AUGUST 3, 1993,
FIRST INTERVAL UNIT 1 AND UNIT 2)

Pursuant to 10 CFR 50.12(a)(2)(ii), TU Electric requests an exemption from the requirements (testing frequency) of 10 CFR 50.55a(f)(4)(i) and (ii). These regulations require that inservice tests on pumps and valves whose function is required for safety must comply with a specified ASME Code. Specifically, TU Electric requests approval to utilize a risk-based inservice testing program to determine inservice test frequencies for valves and pumps that are identified as less safety significant, in lieu of testing those components per the frequencies specified by the ASME Code. Enclosure 1 to this letter describes the exemption request and provides justification for the request. Enclosure 2 is the Risk-Based Inservice Testing (IST) Program Description. Enclosures 3, 4, and 5 provide details regarding the implementation of the risk-based IST program at CPSES.

This request has been developed as part of an industry pilot effort to implement the use of probabilistic risk assessment (PRA) technology and operating experience to enhance and broaden the deterministic approach in determining valves and pumps testing requirements. The proposed risk-based process is generally consistent with the Electric Power Research Institute (EPRI) PSA Applications Guide, TR-105396, dated August 1995, and the draft Nuclear Energy Institute (NEI) Industry Guideline for Risk-Based Inservice Testing, dated September 20, 1995. The proposed risk-based process utilizes the original IPE and IPEEE for CPSES, submitted to the NRC in response to Generic Letter 88-20, Individual Plant Examination for Severe Accident Vulnerabilities (IPE) in letters TXX-92387, dated August 28, 1992, TXX-92490, dated October 30, 1992, and TXX-95171, dated June 27, 1995.

It is TU Electric's understanding that Arizona Public Service Company (APSC) (Palo Verde Units 1, 2, and 3), as the other lead pilot plant, will be submitting (or has submitted) an exemption request similar to this, and that the APSC submittal will be reviewed by the NRC together with this submittal.

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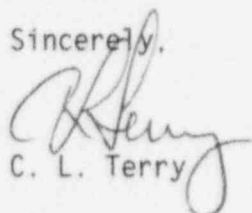
It is also anticipated that the other utility members of the risk-based IST pilot project will incorporate lessons learned from these initial reviews and submit similar licensing actions.

TU Electric considers this request to be in support of the NRC Policy Statement on the use of PRA methods in nuclear regulatory activities published in the August 16, 1995, Federal Register (FR), pages 42622 through 42629. The Policy Statement states, in part: "(1) [T]he use of PRA technology should be increased in all regulatory matters to the extent supported by the state-of-the-art in PRA methods and data in a manner that complements the NRC's deterministic approach and supports the NRC's traditional defense-in-depth philosophy. (2) PRA and associated analyses (e.g. sensitivity studies, uncertainty analyses, and importance measures) should be used in regulatory matters, where practical within the bounds of the state-of-the-art, to reduce unnecessary conservatism associated with current regulatory requirements, regulatory guides, license commitments, and staff practices."

Implementing the requested exemption would have an acceptable effect on safety, and would result in a savings of well over \$100,000 during the remaining life of the facility, not including replacement power costs. Since the savings could begin upon approval of this request, earlier implementation would result in greater savings.

Should you have any questions, please contact Carl B. Corbin at (214)-812-8859.

Sincerely,



C. L. Terry

- CBC\cc
- Enclosure 1, "Request for Exemption from 10CFR50.55a(f)(4)(i) and (ii) for Inservice Testing Frequency"
 - Enclosure 2, "Risk-Based In-Service Testing Program Description," Revision 0
 - Enclosure 3, "Risk-Based In-Service Testing Program, Risk-Ranking Determination Study Summary Report"
 - Enclosure 4, "Risk-Based In-Service Testing Program Risk-Ranking Determination Study," Revision 0
 - Enclosure 5, "Risk-Based In-Service Testing Program, Implementation Results"

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- Mr. L. J. Callan, Region IV
 - Mr. D. D. Chamberlain, Region IV
 - Mr. T. J. Polich, NRR
 - Mr. C. Thomas, NRR
 - Mr. G. Bynog, TDLS
 - Mr. W. L. Stewart (Arizona Public Service Company)
Resident Inspector, CPSES

ENCLOSURE 1

REQUEST FOR EXEMPTION FROM 10CFR50.55a(f)(4)(i) AND (ii)
FOR INSERVICE TESTING FREQUENCY

CURRENT REGULATION REQUIREMENTS

CPSES Technical Specification (TS) 4.0.5.a requires that inservice testing of ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50, Section 50.55a(f).

Regulation 10 CFR 50, Section 50.55a(f)(4)(i) states:

Inservice tests to verify operation readiness of pumps and valves, whose function is required for safety, conducted during the initial 120-month interval must comply with the requirements in the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section on the date 12 months prior to the date of issuance of the operating license subject to the limitations and modifications listed in paragraph (b) of this section.

Regulation 10 CFR 50, Section 50.55a(f)(4)(ii) states:

Inservice tests to verify operation readiness of pumps and valves, whose function is required for safety, conducted during successive 120-month interval must comply with the requirements in the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed in paragraph (b) of this section.

The ASME Code (currently the 1989 Edition of ASME Code, Section XI, No Addenda) specifies the following test frequencies:

Test Type	Test Frequency (nominal)	Code Reference
Pump Test	3 months	OM Part 6
Valve Position Indication Verification	2 years	OM Part 10
Valve Exercising Test	3 months	OM Part 10
Valve Fail-Safe Test	3 months	OM Part 10
Valve Leak Rate Test	2 years	OM Part 10
Check Valve Exercise Test	3 months	OM Part 10
Safety/Relief Valve Setpoint Test	5 years (class 1) 10 years (class 2, 3)	OM Part 1

EXEMPTION REQUEST

In lieu of performing inservice tests on pumps and valves whose function is required for safety at frequencies specified in the ASME Code, as required by 10 CFR 50.55a(f)(4)(i) during the 120 month operating interval, this exemption would allow the inservice test frequencies of those pumps and valves to be determined in accordance with an NRC approved Risk-Based IST Program Description at CPSES as follows:

- (1) The safety significance of pumps and valves whose function is required for safety will be assessed in accordance with the NRC approved Risk-Based IST Program Description. These components will be classified as either More Safety Significant Components (MSSCs) and or Less Safety Significant Components (LSSCs). The inservice testing of those components classified as LSSC will be performed at extended test frequencies determined in accordance with the Risk-Based IST Program Description. The inservice test methods for all pumps and valves whose function is important to safety will continue to be performed in accordance with the ASME Code.
- (2) The safety significance assessment of pumps and valves will be updated, as specified in the Risk-Based IST Program Description.
- (3) The Risk-Based IST Program Description may be revised without prior NRC approval, provided the changes do not have an adverse impact on plant safety.

This exemption will also apply to 10CFR50.55a(f)(4)(ii) for successive 120-month IST intervals.

BASIS FOR EXEMPTION

Regulation 10CFR50.12(a) allows the NRC to grant exemptions from the requirements of the regulations, which are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security. Further, special circumstances are present. According to 10CFR50.12(a)(2)(ii), special circumstances include whenever application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.

The underlying purpose of the rule is to assure the safety-related pumps and valves at nuclear power plants are tested to quality standards commensurate with the importance of the safety function to be performed. The proposed exemption would allow a Risk-Based IST Program to be implemented that would more precisely identify the importance of the safety functions of the components in the IST Program and then ensure that the components are tested at a frequency commensurate with their importance. Compliance with this exemption request constitutes compliance with 10CFR50.55a and the existing CPSES Technical Specifications.

The current Code is based on a deterministic approach which considers a set of challenges to safety and determines how those challenges should be mitigated. The deterministic approach contains elements of probability, such as the selection of accidents to be analyzed as design basis accidents (e.g., the reactor vessel rupture is considered too improbable to be included) and the requirements for emergency core cooling (e.g., safety train redundancy).

The Risk-Based IST Program that would be implemented with this exemption incorporates a probabilistic approach to regulation which enhances and extends this traditional, deterministic approach, by:

- (1) allowing consideration of a broader set of potential challenges to safety,
- (2) providing a logical means for prioritizing these challenges based on risk significance, and
- (3) allowing consideration of a broader set of resources to defend against these challenges.

First, the IPE model has identified a broader set of challenges to safety. The Risk-Based Inservice Testing Program has identified More Safety Significant Components (MSSCs) which were not in the ASME Section XI IST Program. Even though the components are outside the Code class boundary, they will be tested commensurate with their safety significance. The expert panel will determine the appropriate compensatory measures for the safety function.

Components in the current ASME Section XI IST Program which are determined to be MSSCs will continue to be tested in accordance with the current Program, which meets the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, except where specific written relief has been granted. Components in the current ASME Section XI IST Program which are determined to be LSSCs will also be tested in accordance with the ASME Section XI IST Program, except that the test frequency will initially be extended to once every 6 years. The extended test interval will be phased in gradually over the 6 years as described in Enclosures 2 and 3. No LSSCs will be deleted from the ASME Section XI IST Program.

Second, the Risk-Based Inservice Testing Program prioritizes these challenges based on the results of the CPSES IPE. The risk rankings are then complemented with rankings based on consideration of other accident initiators (e.g. fires, tornados, and earthquakes) and plant operating modes. These rankings considered importance with respect to core damage prevention, and prevention of large early releases. Enclosure 2 describes the program methodology and Enclosures 3, 4, and 5 describes the results from the initial implementation of that methodology.

Third, an expert panel process allows a broader set of resources to be considered to defend against challenges to safety. The expert panel is composed of experienced individuals with expertise in the areas of ASME Code, plant operations, maintenance engineering, system engineering, design engineering, and probabilistic risk assessment. The expert panel was responsible to ensure the risk ranking input information was consistent with

plant design, operating procedures, and with plant-specific operating experience. At the end of the expert panel review process every component in the CPSES ASME Section XI IST Program was reviewed. The risk-based process will assure that a defense-in-depth philosophy is maintained.

Item 3 of the exemption request allows changes to the methodology in the Risk-Based Inservice Testing Program, without prior NRC approval. This provision is similar to the change process for other Licensing Basis Documents such as the Security Plan. The regulations for the Security Plan allow changes without prior approval provided there is no unreviewed safety question or the effectiveness of the Plan is not reduced.

As a living process, components will be reassessed periodically to reflect changes in plant configuration, component performance, test results, industry experience, and other factors. When the list of components is affected, changes will be provided to the NRC in regular Program updates.

Subsequent changes to the list of LSSCs and/or the extended test interval made through this process will be reviewed for applicability under the 10CFR 50.59 process.

There are safety enhancements obtained by focussing resources on MSSCs and reducing the testing frequency on LSSCs. Extensive testing on LSSCs could have an adverse effect on safety. Reduction of testing will reduce component wear-out, operator burden, system unavailability, cost of testing, and radiation exposure. Reduced testing could also achieve a more optimum balance between the positive impacts of testing and the negative effects of disturbing equipment from service and entering less than optimum plant configuration, such as valve misalignments.

In addition, testing LSSCs at Code-required frequencies incurs a significant economic burden that is much greater than, and not commensurate with, the safety benefit derived. By redeploying some of the resources now devoted to testing LSSCs, plant safety can be improved while cost is reduced. The cost savings for the two units at CPSES is well over \$100,000 during the remaining life of the facility, not including replacement power costs.

ENCLOSURE 2

RISK-BASED INSERVICE TESTING PROGRAM DESCRIPTION
REVISION 0

The proposed exemption is a risk-based process to determine the safety significance and testing frequencies of components in the ASME Section XI IST Program, and evaluate non-IST components (pumps and valves) modeled in the IPE determined to be More Safety Significant Components (MSSCs). The process consists of the following elements:

1. Determining the safety significance of components in the ASME Section XI IST Program.
2. Extending the test frequencies of certain Less Safety Significant Components (LSSCs).
3. Reviewing the testing of MSSCs not in the ASME Section XI IST Program.
4. Evaluating the aggregate impact of the changes to ensure an acceptable change in plant safety.
5. Periodic reassessment.
6. Corrective actions.

1. Determining Safety Significance of Components in the ASME Section XI IST Program

The safety significance of components in the IST Program will be determined through a blended approach of probabilistic and deterministic methods.

2. Extending Test Frequencies of certain Less Safety Significant Components (LSSCs)

The test frequency of certain LSSCs in the ASME Section XI IST Program will initially be extended to once every 6 years. All other Code testing methods, corrective actions, documentation, and other requirements will remain in effect. No LSSCs will be deleted from the ASME Section XI IST Program; their lesser contribution to safety will be reflected in their frequency of testing.

To be initially considered for extension, a component must meet both of the following criteria:

- The component has been determined to be an LSSC by the expert panel, using a blend of probabilistic and deterministic methods.
- The previous two tests were completed satisfactorily.

Extended test frequencies will be phased in over the initial 6 year period in order to take advantage of the benefits that can be obtained through sampling techniques. Groups of components will be established using sampling based on guidance provided in NUREG 1482. Components in each group will be tested during each fuel cycle so that each component is tested at least once every 6 years.

If a component fails to meet established test criteria, the need to test the remaining components in that group will be evaluated under the CPSES corrective action program.

3. Reviewing The Testing Of More Safety Significant Components (MSSCs) not in the ASME Section XI IST Program

In addition to identifying candidates for frequency extension, the risk-based process will identify pumps and valves that are not currently tested in the ASME Section XI IST Program that are MSSC. These components will be reviewed to ensure that testing is performed commensurate with their safety significance.

4. Evaluating The Aggregate Impact Of The Changes To Ensure an Acceptable Change in Plant Safety

Test frequency changes (including existing relief requests) will be evaluated to ensure that the aggregate impact on plant safety is acceptable. One or both of the following methods will be used in this evaluation:

- The aggregate impact of the changes will be reviewed by the Expert Panel.
- The IPE models will be updated to reflect the changes to test frequency of modeled components, and the IPE study will be re-evaluated to quantify the aggregate impact.

5. Periodic Reassessment

As a living process, components will be reassessed at frequency not to exceed 3 years to reflect changes in plant configuration, component performance, test results, industry experience, and other inputs to the process. When test frequencies are affected, changes will be provided to the NRC in regular Program updates.

6. Corrective Actions

When an LSSC on the extended test frequency fails to meet established test criteria, corrective actions will be taken in accordance with the CPSES corrective action program. This corrective action will include an evaluation of the need to test the remaining components in the group.

ENCLOSURE 3 TO TXX-95260