

April 30, 1997

FOR: The Commissioners

FROM: L. Joseph Callan /s/  
Executive Director for Operations

SUBJECT: PROBABILISTIC RISK ASSESSMENT IMPLEMENTATION PLAN PILOT APPLICATION FOR RISK-INFORMED TECHNICAL SPECIFICATIONS

**PURPOSE:**

To inform the Commission of the intent to issue an amendment to the technical specifications (TS) for Arkansas Nuclear One, Unit 2 (ANO-2), to grant extensions of the allowed outage times (AOTs) for one inoperable safety injection tank (SIT) and one inoperable low pressure safety injection (LPSI) system on the basis of risk-informed analyses.

**BACKGROUND:**

Task 1.2 of the Probabilistic Risk Assessment (PRA) Implementation Plan addresses pilot applications for risk-informed regulatory initiatives. The task objective is to evaluate PRA methodologies and develop staff positions on emerging risk-informed initiatives. Item number six under Task 1.2 is risk-informed TS. This paper transmits the staff's proposed safety evaluation for TS amendments for ANO-2, the lead plant for the risk-informed TS pilot application.

In its staff requirements memorandum (SRM) of May 15, 1996, the Commission requested that the staff prepare a policy paper, with recommendations, addressing the resolution of the four emerging policy issues identified in the quarterly status update of the PRA Implementation Plan dated March 26, 1996. The Commission requested that the staff prepare the policy paper for the Commission's decision prior to the staff's issuance of any final safety evaluation, position, or guidance. The staff's recommendations concerning the four policy issues were forwarded to the Commission in SECY-96-218, dated October 11, 1996.

The Commission responded to these recommendations in an SRM dated January 22, 1997. The staff believes that the review and approval of the ANO-2 risk-informed TS changes are in accordance with the Commission's positions as stated in the January 22 SRM.

**DISCUSSION:**

In August 1995, the Combustion Engineering Owners Group (CEOG) submitted several Joint Application Reports for the extension of TS AOTs for the staff's review. Two of the CEOG Joint Application Reports provide justifications for extensions of the TS AOTs for the SITs and for the LPSI system. The justifications for these extensions are based on a balance of probabilistic and traditional engineering considerations. Plant-specific risk assessments for all of the Combustion Engineering (CE) plants are contained in the reports. ANO-2 is the lead CE plant for the SIT and LPSI system TS changes. Nine of the ten licensees with CE plants have submitted amendment requests to adopt the changes to the SIT and LPSI system AOTs. The staff plans to use the ANO-2 review as a model for the remaining CE plants and will prepare safety evaluations for those plants with comparable results when the ANO-2 amendment has been approved for issuance. In addition, the staff is reviewing corresponding changes to NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants," to adopt the revised AOTs.

The proposed changes would allow extension of the AOT for one inoperable SIT from 1 to 24 hours and for one inoperable LPSI system from 72 hours to 7 days. The purpose of these proposed changes is to obtain greater flexibility in the scheduling and implementation of maintenance on the subject equipment. The safety benefits of these proposed changes are outlined in the attached safety evaluation and include avoiding plant shutdowns for non-risk-significant conditions.

The staff evaluated the licensee's proposed amendments to the TS using both traditional engineering analysis and PRA methods. The staff's traditional analysis evaluated the capabilities of the plant to mitigate design basis events with one SIT or one LPSI system inoperable. The staff then used insights derived from the use of PRA methods in determining the risk significance of the proposed changes. The results of these evaluations were used in combination by the staff to determine the safety impact of extending the AOTs for one inoperable SIT and for one inoperable LPSI system.

The staff's review of the ANO-2 amendment requests and the CEOG Joint Application Reports was made in parallel with, and is generally consistent with the results of, the staff's development of draft Regulatory Guide (RG) DG-1061, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Current Licensing Bases"; draft Standard Review Plan (SRP) Chapter 19, "Use of Probabilistic Risk Assessment in Plant-Specific, Risk-Informed Decisionmaking: General Guidance"; draft RG DG-1065, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications"; and draft SRP Chapter 16.1, "Risk-Informed Decisionmaking: Technical Specifications." These documents were transmitted to the Commission in SECY-97-077, dated April 8, 1997. In addition, since the CEOG submitted the Joint Application Reports in August 1995, the staff has met with the CEOG on numerous occasions to discuss the staff's review of the Joint Application Reports and the development of the regulatory guidance documents. The staff believes that the evaluations described in the CEOG Joint Application Reports and the ANO-2 amendment requests are generally consistent with the guidance outlined in draft RGs DG-1061 and DG-1065 and that the staff's review of these submittals is generally consistent with draft SRP Chapters 16.1 and 19.

After completing its evaluation of the ANO-2 proposed changes, the staff has determined that they are acceptable. This determination is based on the following:

1. The need to maintain reliable safety systems.
2. Consideration of the design basis requirements for the SITs and the LPSI system.
3. Insights gained from the quantitative evaluation of the risk associated with having one SIT or one LPSI system out of service.
4. A three-tiered implementation strategy that ensures that the risk incurred when a SIT or LPSI system is taken out of service is minimized.
5. Performance monitoring through the maintenance rule (10 CFR 50.65) to provide feedback as to the effectiveness of the AOT extensions.

Each of these elements is described in detail in the attached safety evaluation. In approving the proposed TS changes, the staff is relying on a commitment made by the licensee, as described in the attached safety evaluation, specifically, with respect to utilization of a risk-informed configuration control technique to assess the risk associated with removal of equipment from service during the proposed AOT. Because this is a new commitment specific to risk-informed TS changes, the staff will ensure that the commitment is incorporated into the ANO-2 operating license. This may be done by incorporating the commitment as a license condition or in the administrative controls section of the TS.

On the basis of this information, the staff finds that, for ANO-2, the AOT for one inoperable SIT may be extended to 24 hours, and that the AOT for one inoperable LPSI system may be extended to 7 days, with a negligible impact on risk. The staff intends to perform limited reviews of the plant-specific aspects of similar amendment requests from the remaining CE plants and to grant those amendments when the results of the staff's evaluation are comparable to those for ANO-2.

COORDINATION:

The Office of the General Counsel has no legal objection to this paper.

RECOMMENDATION:

That the Commission:

Note that it is my intention to approve the issuance of an amendment to the ANO-2 TS as described in the attached safety evaluation. This license amendment will be issued to Entergy Operations, Inc., no sooner than 10 working days from the date of this paper unless the staff is instructed otherwise by the Commission.

Note that it is my intention to approve the issuance of similar amendments for the remaining CE plants when the results of the staff's evaluation are comparable to those for ANO-2.

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[Attachment](#): ANO-2 Safety Evaluation