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Project 689

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Dear Mr. Tjader:

Enclosed is NEI-04-10, draft Rev 1. This is the draft industry methodology document for risk-informed technical specifications initiative 5B, providing a risk-informed method for determination of surveillance frequencies. This document was referenced in the Limerick amendment request and TSTF 425, and is intended to support future licensee submittals to implement initiative 5B. Revision 1 reflects revisions to address NRC concerns on selection of surveillances.

We look forward to the NRC's timely review of this document, and approval of the initiative 5B methodology by the end of this year. Please contact me at (202) 739-8081, or Biff Bradley (202) 739-8083 if you have any questions.

Sincerely,

Anthony R. Pietrangelo

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Enclosure:

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1 INTRODUCTION

1.0 Introduction

The Technical Specification Task Force (TSTF) has proposed TSTF-425, which relocates the majority of the Technical Specification Surveillance Requirement Frequencies to a licensee-controlled program. The Surveillance Requirements would remain in the Technical Specifications, pursuant to 10 CFR 50.36. The Administrative Controls section of the Technical Specifications would specify the requirements for a Surveillance Frequency Control Program (SFCP) that the licensee would use to control Surveillance Frequencies and make future changes to the Surveillance Requirement Frequencies.

The Surveillance Frequency Control Program states:

5.5.15 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, " Methodology for Implementing a Surveillance Frequency Control Program."

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

This document provides a risk-informed process and methodology for implementing the SFCP to control the relocated Technical Specification Surveillance Requirement Frequencies for structures, systems and components (SSC). The methodology of this document, once accepted by Nuclear Regulatory Commission, provides the basis for maintaining and changing the Technical Specification Surveillance Frequencies in accordance with the SFCP.

2.0 Overall Approach

The SFCP shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation (LCOs) are met. Existing regulatory programs, such as 10 CFR 50.65 (the Maintenance Rule) and the corrective action program required by 10 CFR 50, Appendix B, require monitoring of Surveillance test failures and require action be taken to address such failures. One of these actions may be to consider changing the Frequency at which a Surveillance is performed. These regulatory requirements are sufficient to ensure that Surveillance Frequencies which are insufficient to assure the LCO is met are identified and action taken. In addition, the SFCP requires monitoring of Surveillance Frequencies which are changed using the process described in this document.

The approach for changing Surveillance Frequencies uses existing Maintenance Rule implementation guidance (NUMARC 93-01, Rev. 3) (Reference 2), risk categorization guidance originally developed for the proposed 10 CFR 50.69, "Option 2" rulemaking, (NEI 00-04) (Reference 3), combined with elements of NRC In-service Testing Regulatory Guide (RG) 1.175 (Reference 6), to develop risk-informed test intervals for SSCs having Technical Specification Surveillance Requirements. Although originally developed to address test intervals for pump and valve testing required by the ASME Code, the concepts of RG 1.175 are applicable to the SFCP with minor modifications. In particular, this Regulatory Guide provides information relative to modeling the effect of the revised surveillance Frequencies in a probabilistic risk assessment (PRA).

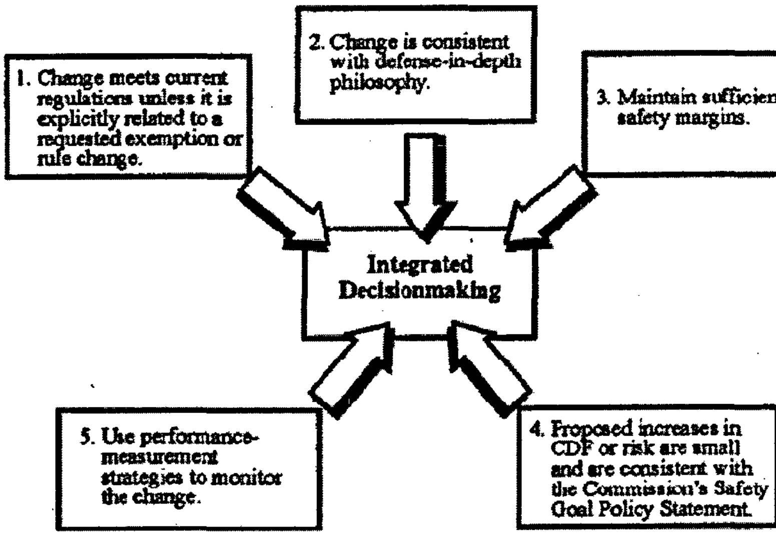
The method described here is also consistent with RG 1.174 (Reference 4), "An Approach for Using Probabilistic Risk Assessments in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and RG 1.177 (Reference 5), "An Approach for Plant-Specific Risk-Informed Decisionmaking: Technical Specifications" and provides more specific guidelines to facilitate application by the licensee. RG 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency changes, it refers to RG 1.174. The regulatory guide provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF), along with additional guidelines that have been adapted for this methodology.

The detailed SFCP process is described in Section 4. PRA technical adequacy will be addressed through NRC RG 1.200 (formerly Draft Guide DG-1122) (Reference 7). Following the establishment of adequate PRA capability, the process involves a categorization of the subject SSCs into high-safety-significance (HSSC), or low-safety-significance (LSSC). Once categorized, revised Surveillance Frequencies are developed based on risk insights from PRAs, plant operational experience, and other factors. For HSSCs, the PRA is used to quantify the effect of the proposed change, and the aggregate risk impact of the revised Frequencies is compared to NRC risk acceptance guidelines. For LSSCs, very low risk impact will result from the revised Frequencies, and no additional monitoring would be proposed, beyond those already being conducted under the Maintenance Rule. Feedback and periodic re-evaluation of the Frequencies will be conducted for HSSCs and LSSCs.

3.0 KEY SAFETY PRINCIPLES FOR CHANGING FREQUENCIES

RG 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

Figure 1 of RG 1.174 illustrates the consideration of each of these principles in risk-informed decision making.



1. The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.

10 CFR 50.36(c) provides that Technical Specifications will include items in the following categories:

"(3) *Surveillance Requirements.* Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

Technical Specifications Initiative 5B and TSTF-425 propose to relocate the Frequencies for most Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Frequencies. The Surveillance Requirements themselves would remain in Technical Specifications.

This change is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Primary Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. The proposed change is consistent with the defense-in-depth philosophy.

Consistency with the defense-in-depth philosophy is maintained if:

- A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation
- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided
- System redundancy, independence and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers)
- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed
- Independence of barriers is not degraded
- Defenses against human errors are preserved
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A are maintained

These defense-in-depth objectives apply to all risk-informed applications and, for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling their change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program should promote an improved overall understanding of how the SSCs contribute to a plants defense in depth.

3. The proposed change maintains sufficient safety margins.

Conformance with this principle is assured since Codes and Standards or alternatives approved for use by the NRC will still be met with the proposed changes. Also, the safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) are met with the proposed changes.

4. When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.

In the SFCP, information obtained from a PRA is used in two ways: First, to provide input to the categorization of SSCs into HSSC and LSSC groupings; and second, to

assess the impact of a specific proposed Frequency change on CDF and LERF. The overall impact of the change is assessed and compared to the quantitative risk acceptance guidelines of RG 1.174, which is consistent with the intent of the Commission's Safety Goal Policy Statement. More detail is provided in subsequent paragraphs that describe the SFCP process. The PRA used to support this change will, at a minimum, address CDF and LERF for power operation. External event risk and shutdown considerations will be addressed through quantitative or qualitative means.

NRC RG 1.200 addresses technical adequacy of PRA for risk-informed applications. This regulatory guide will be followed for plants proposing to implement Initiative 5B through TSTF-425 and the SFCP.

5. The impact of the proposed change should be monitored using performance measurement strategies.

For HSSCs, a performance monitoring strategy should be developed to provide confidence that the equipment performance is consistent with the considerations of the overall SFCP process, and is not degrading such that the analysis assumptions and expert panel judgments are no longer valid. The output of the performance monitoring should be periodically re-assessed, and appropriate adjustments made to the Frequencies.

LSSCs have been shown through a robust categorization process (NEI 00-04) to be of low risk significance. Changes to Surveillance Frequencies for these SSCs will have a small effect on their performance, and thus will have a second order effect on risk. Because of this minimal risk impact, existing performance monitoring required by the Maintenance Rule is adequate for LSSCs whose Surveillance Frequencies are controlled under the SFCP.

4.0 Surveillance Frequency Control Program Change Process

The SFCP change process is shown in a flow diagram in the Figure 1. The process steps are described below:

4.1 Steps 1 Through 4 Checking Commitments for HSSC

Step 1: Check for Prohibitive Commitments

In Step 1, all the commitments made to the NRC are collected and reviewed. Some of the commitments to maintain a certain Surveillance Frequencies may have been made in relation to certain other plant issues. As part of this step, such commitments are identified and then, in Step 2, the commitment is examined to determine if it can be changed. If there are no such commitments, then the Frequency change process continues in Step 5.

Step 2: Can Commitments Be Changed?

In Step 2, a check is made to determine if the NRC commitments can be changed. If the commitment can be changed, go to Step 3 for changing the commitment. If the commitment cannot be changed, document the information and leave the Frequency unchanged in Step 4.

Step 3: Change the Commitment

In Step 3, change the commitment using NRC-approved process such that the Frequency can be revised using the SFCP process. Changing the NRC commitment is a separate activity. Return to the SFCP process after the commitment has been changed. If the NRC does not permit the commitment change, go to Step 4, since the Frequency change cannot be implemented. After the commitment change has been made, go to Step 5.

Step 4: Document That Frequency Changes Cannot be Changed

This step is entered if, in Step 2, it is determined that the commitment related to a certain Surveillance Frequency cannot be changed. Document that the Frequency cannot be changed and the process concludes here.

4.2 Steps 5 Through 8:Categorize SSCs into High Safety-Significance (HSSC) or Low Safety Significance Components (LSSC).

Step 5: Existing Maintenance Rule Categorization

The Maintenance Rule also addresses SSCs that are subject to Technical Specification Surveillance Requirements. The Maintenance Rule requires that licensees monitor the performance or condition of SSCs against licensee-established goals in a manner sufficient to provide reasonable assurance that such SSCs are capable of fulfilling their intended functions. Such goals are to be established, where practical, commensurate with safety, and they are to take into account industrywide operating experience. When the performance or condition of a component does not meet established goals, appropriate corrective actions are to be taken.

Implementation guidance for the Maintenance Rule has been developed and approved by NRC. This guidance, NUMARC 93-01, Revision 3, provides that:

1. Insights from probabilistic risk assessment (PRA) should be used to determine the risk-significance of affected SSCs through the use of risk-importance measures.

2. SSC availability and reliability impacts should be balanced in a manner that addresses the risk insights from the PRA.

3. Performance monitoring of SSCs should be conducted commensurate with their risk impact.

Step 6: Recategorize HSSC?

As noted in the discussion relating to the previous step, the Maintenance Rule provides a basis for classification of SSCs as either HSSC or LSSC. Licensees may choose to retain

the existing Maintenance Rule classification for Technical Specification SSCs currently classified as HSSC. Otherwise (e.g., for Maintenance Rule LSSCs, or for potential recategorization of Maintenance Rule HSSCs as LSCCs), the NEI 00-04 categorization process should be followed. For many SSCs that are obviously of high risk-importance, retaining the existing HSSC designation is an efficient approach.

The categorization may be conducted on a functional level or on an SSC level, as discussed in NEI 00-04. This is discussed in detail in Step 8.

Step 7: RG 1.200 PRA Technical Adequacy

NRC has developed a regulatory guidance for trial use to address PRA technical capability. This is RG 1.200 (Reference 7), which addresses the use of the ASME PRA standard, and the NEI peer-review process (NEI 00-02) for evaluating PRA technical capability.

RG 1.200 also provides attributes of importance for risk determinations relative to external events, seismic, internal fires and shutdown.

It is envisioned that plants implementing TSTF-425 would evaluate their PRA in accordance with this regulatory guide. The RG specifically addresses the need to evaluate important assumptions that relate to key modeling uncertainties (such as reactor coolant pump seal models, common cause failure methods, success path determinations, human reliability assumptions, etc). Further, the RG addresses the need to evaluate parameter uncertainties and demonstrate that calculated risk metrics (e.g, CDF and LERF) represent mean values.

This step is shown in dotted lines because it is actually related to the adequacy of the SFCP process itself and getting the process ready for the evaluation, rather than the impact of the Frequency change.

Step 8: NEI 00-04 Categorization

NEI 00-04 addresses all necessary considerations for categorizing components for the proposed 10 CFR 50.69, as well as for this application. This document provides for an integrated decision making panel (IDP) (i.e., expert panel) process using insights from available risk information and includes consideration of the following:

- Internal events risk based on a PRA
- Fire risk using a Fire PRA or FIVE analysis
- Seismic risk using a seismic PRA or seismic margins analysis
- Shutdown risk using a shutdown PRA or shutdown risk studies
- Use of risk importance measures
- Components not modeled in the PRA

- Sensitivity studies.

NEI 00-04 will be followed, unless the licensee determines that current Maintenance Rule HSSC categorizations will be maintained for this application. NEI 00-04 contains a final sensitivity study, specific to the §50.69 rulemaking, that involves raising the failure rates of all RISC-3 (safety-related but low safety significance) SSCs by a specific factor. This portion of NEI 00-04 is not applicable to the SFCP process, and the overall risk impact of this initiative will be demonstrated through other means as discussed later in this paper. *[Note: Plants also implementing Option 2 and desiring a consistent process (and result) for SSC categorization for all applications would need to use the NEI 00-04 final sensitivity study to meet the categorization requirements for the SFCP process.]*

4.3 Steps 9 through 11: Process for SSCs Categorized as Low Safety-Significant (LSSC)

Step 9: Identify Qualitative Considerations to be Addressed

The IDP (expert panel) selects the desired Surveillance Frequencies for the LSSC systems based on qualitative consideration. (See additional details on IDP in Step 10 and 22). In Step 9, such qualitative considerations are developed as an input to the IDP (expert panel). Such considerations include, but are not limited to:

- Surveillance and performance history of the components and system associated with the Frequency change
- Uncertainty associated with the quantitative process
- The impact of systems not quantified using the internal events PRA
- The impact of systems for which LERF results are not available
- The impact of systems for which external events and shutdown PRA are not available
- Past industry and plant-specific experience with the functions affected by the proposed changes
- Impact on defense-in-depth protection
- Vendor-specified maintenance frequency
- ASME and other code-specified test intervals
- The qualitative considerations relative to the proposed Frequency changes are presented to the IDP, as described in Step 10.

Step 10: IDP Determines New Frequency for the LSSC

This step involves the use of an IDP, which is charged with the task of reviewing the Frequency extensions qualitatively. The details on the constitution of the IDP are covered in Step 22.

The IDP reviews and approves the revised Frequency for the LSSC systems based on factors such as operating history, reliability and availability.

After the IDP approves the revisions, the changes are implemented and documented for future audits by NRC. If the IDP does not approve certain Frequency changes, then the Surveillance Frequency is left unchanged.

Step 11: Document New Surveillance Frequency and Implement the Changes

The Frequency changes approved by the IDP for the LSSC are documented appropriately and then implemented by revising plant procedures, affected documents, and training the personnel as needed. The Frequency change process stops here, however, long-term monitoring is still required per Step 25.

4.4 Steps 12 through 23: Process for SSCs Categorized as High Safety-Significant Components (HSSC)

Step 12: Select Desired Revised Surveillance Frequencies

Technical Specifications Surveillance Frequencies are identified for improvement. This identification is done based on the difficulty of the test, cost of the test, potential for error during the test and its consequence, and the role of the test on the reliability of the associated function. The licensee should also identify the desired revised Surveillance Frequency.

Following this step, the SFCP process diverges into two paths, both of which need to be followed. One path, starting at Step 13, performs a qualitative evaluation; and the other path, starting at Step 14, leads to a quantitative evaluation. Both paths converge later at Step 22.

Step 13: Identify Qualitative Considerations to Be Addressed

Qualitative considerations are developed as an input to the IDP. Such considerations include, but are not limited to:

- Surveillance and performance history of the components and system associated with the Frequency change
- Uncertainty associated with the quantitative process
- The impact of systems not quantified using the internal event PRA
- The impact of systems for which LERF results are not available
- The impact of systems for which external events and shutdown PRA are not available
- Past industry and plant-specific experience with the functions affected by the proposed changes

- Impact on defense-in-depth protection
- Vendor-specified maintenance frequency
- ASME and other code-specified test intervals.

The qualitative considerations are presented to the IDP (Step 22) along with the quantitative considerations from Step 21.

Step 14: Associated SSC Frequency Modeled in PRA?

Check if the surveillance or the associated system or component is modeled in the PRA. At this point, the focus is on the internal event full power PRA, although the question is applicable for the external event and shutdown PRA as well. If yes, go to Step 18. If not, go to Step 15 to determine if Surveillance Frequency can be modeled in the PRA.

The SFCP process requires that, as a minimum, the internal event full power PRA be available. However, if the Fire, Seismic or Shutdown PRA is not available, then go directly to Step 16 to carry our bounding analysis for that PRA, but continue with the process.

Step 15: Can Frequency Be Modeled in PRA?

Step 15 is entered if in Step 14 it is determined that the system or component associated with the Frequency is not modeled in the PRA. In this step, the analyst has to decide if the Frequency can be modeled in the PRA. The determination pertains to all PRAs, including external events and shutdown, but the initial focus is on the internal events PRA. If the Frequency can be modeled in the PRA, go to Step 17. If not, go to Step 16.

Step 16: Perform Bounding Risk Analysis

Step 16 is entered from Step 15 when it is determined that the Frequency change cannot be modeled in the plant PRA. In such a case, the PRA analyst will have to perform bounding analyses that would provide some indication of the impact of the Frequency change on the PRA results. Bounding analyses are either quantitative analysis carried out with available PRA models or qualitative evaluation using deterministic considerations. Results of the analyses are sent to the IDP in Step 22.

Step 17: Revise PRA Model as Needed

Step 17 is entered from Step 15 when it is determined that the Frequency change can be modeled in the PRA. Modify the PRA to reflect the Frequency change. Section 2.3.3 of RG 1.175 provides guidance on PRA modeling. It states that the assumption that the total unavailability scales linearly with the Frequency is conservative and is acceptable to the NRC. However, for more realistic modeling and to justify less frequent testing, modeling the "demand" contribution in addition to the Frequency-dependent contribution to system unavailability would be needed. The output of this step is an input to the Step 18, CDF and LERF evaluation.

Step 18: Evaluate Cumulative Effect on CDF & LERF

In Step 18, the cumulative effect on CDF and LERF of all risk-informed Surveillance Frequency revisions on all PRAs (internal event, fire, flood, seismic event, and shutdown) is evaluated.

Step 19: Total CDF & LERF Change <RG 1.174 Limits?

In Step 19, the cumulative impact of all risk-informed Surveillance Frequency changes on all PRAs (internal event, fire, flood, seismic event and shutdown) must also meet the RG 1.174 limits for CDF and LERF changes. If the RG 1.174 guidelines (limits) are met, then go to Step 21. If not, go to Step 20 where the proposed Frequencies are revised and sent for re-evaluation (to Step 18). The CDF and LERF values are re-evaluated. (Note: The seq of Steps 18, 19 and 20 is repeated until, at Step 19, CDF and LERF values are determined to be within the RG 1.174 limits.)

Step 20: Revise Surveillance Frequencies

Step 20 is entered where it is determined that the Surveillance Frequency revisions do not meet the Regulatory Guide 1.174 acceptance criteria (Step 19), are not supported by sensitivity studies (Step 21), or not accepted by the IDP (Step 22). The Surveillance Frequencies are adjusted accordingly and re-evaluated in Step 18.

Step 21: Perform Sensitivity Studies

Carry out risk sensitivity studies by changing the unavailability terms for PRA basic events that correspond to SSCs being evaluated. As stated in Section 8 of NEI 00-04, the basic events for both random and common cause failure events should be increased for failure modes impacted by the changes. A factor of is appropriate as sensitivity because it is representative of the change in reliability between a mean value and an upper bound (95 percentile) for typical equipment reliability distributions. For example, for a lognormal distribution the ratio of 95 percentile to mean value would be approximately 2.4 for an error factor of 3 and 3.5 for an error factor of 10.

Other issues that should be addressed in the quantification of the change in risk include the following.

- The impact of the Surveillance Frequency change on the frequency of event initiators (those already included in the PRA and those screened out because of low frequency) should be determined. For applications in this initiative, potentially significant initiators include valve failure that could lead to interfacing system loss-of-coolant accidents (LOCAs) or to other sequences that fail the containment isolation function.

- The effect of common-cause failures (CCFs) should be addressed either by the use of sensitivity studies or by the use of qualitative assessments that show that the CCF contribution would not become significant under the revised Frequencies

(e.g., by use of phased implementation, staggered testing and monitoring for common cause effects).

- Justification of Surveillance Frequency changes should not be based on credit for post-accident recovery of failed components (repair or ad hoc manual actions, such as manually forcing stuck valves to open). However, credit may be taken for proceduralized implementation of alternative success strategies. The evaluation should be performed so that the truncation of LSSCs is considered. It is preferred that solutions be obtained from a resolution of the model, rather than a reunification of CDF and LERF cutsets.

If the sensitivity evaluation shows that the changes in CDF and LERF as a result of changes in SSCs being evaluated are not within the acceptance guidelines of Regulatory Guide 1.174, then revised Frequencies may be needed (go to Step 20). If the sensitivity evaluation supports the Frequency changes, then go to Step 22.

Step 22: IDP Approval or Adjust Frequency

This step involves the use of an IDP which, in addition to reviewing the results quantitatively, is charged with the task of reviewing the Frequency extensions qualitatively.

The qualifications for the IDP members are very similar to the one for the Maintenance Rule. Normally the same IDP/expert panel is used as for the Maintenance Rule implementation. A specialist with experience in surveillance tests and system or component reliability should also be added to the IDP. Details on the qualification of the IDP members are given in NEI 00-04.

If the IDP approves the change, the changes are implemented and documented for future audits by NRC. If the IDP (expert panel) does not approve certain Frequency extensions, then the Frequency is not revised (in Step 20).

The IDP has additional responsibilities. These relate to making recommendations on the way the revised Surveillance Frequencies are implemented (for instance, a phased implementation), reviewing the cumulative impact of all changes carried out over a period of time, and monitoring the impact of changes on failure rates.

Step 23: Document New Frequency and Implement the Changes

This step is similar to Step 11. The Frequency changes approved by the IDP (expert panel) for the HSSC are documented appropriately and then implemented by revising plant procedures, affected documents, and training the personnel as needed. The SFCP process stops here, however, long-term monitoring is still required per Step 24.

4.5 Steps 24 Through 27: Long-Term Monitoring and Feedback

Step 24: Monitoring and Feedback

The purpose of performance monitoring in the SFCP process is twofold. First, performance monitoring should help confirm that no failure mechanisms that are related

to the revised Surveillance Frequencies become important enough to alter the failure rates assumed in the justification of program changes. Second, performance monitoring should, to the extent practicable, ensure that adequate component capability (i.e., margin) exists relative to design-basis conditions so that component-operating characteristics, over time, do not result in reaching a point of insufficient margin before the next scheduled test. Regulatory Guide 1.174 (Ref. 4) provides guidance on performance monitoring when testing under design basis conditions is impracticable. Component or train level monitoring would be expected for HSSCs.

Two important aspects of performance monitoring are whether the Surveillance Frequency is sufficient to provide meaningful data and whether the testing methods, procedures, and analysis are adequately developed to ensure that performance degradation is detected. Component failure rates should not be allowed to rise to unacceptable levels (e.g., significantly higher than the failure rates used to support the change) before detection and corrective action take place.

For acceptance guidelines, monitoring programs should be proposed that are capable of adequately tracking the performance of equipment that, when degraded, could alter the conclusions that were key to supporting the acceptance of the revised Frequencies. Monitoring programs should be structured such that SSCs are monitored commensurate with their safety significance. This allows for a reduced level of monitoring of components categorized as having low safety significance.

The performance monitoring process should have the following attributes:

- Enough tests are included to provide meaningful data
- The test is devised such that incipient degradation can reasonably be expected to be detected.

The output of this step is sent to Step 26.

Step 25: Existing Maintenance Rule (or 10CFR 50.69) Monitoring

For LSSCs, very low risk impact is expected from the revised Frequencies, and no additional monitoring is proposed, beyond that already conducted under the Maintenance Rule. Feedback and periodic re-evaluation of the Frequencies will be conducted for HSSCs and LSSCs (Step 26).

Step 26: Periodic Re-Assessment

The SFCP contains provisions whereby component performance data periodically is fed back into the component test strategy determination (i.e., test interval and methods) process. This would include results of component or train level monitoring for HSSCs, and results of Maintenance Rule (or §50.69 monitoring) for LSSCs.

Measures should be in place to identify the need for more emergent program updates (e.g., following a major plant modification or following a significant equipment

performance problem). The results of these periodic re-assessments are fed back to the IDP (expert panel) in Step 27 for evaluation.

Step 27: IDP (Expert Panel) Reviews Experience Feedback

Step 27 is entered from Step 26 whereby the operating experience feedback following a Frequency change implementation is reviewed periodically.

The IDP would be responsible for periodic review of performance monitoring results (from Step 26) and attendant re-assessment of the program. Any changes identified by the IDP are routed to Step 24. Continue to monitor the results.

1.1 5.0 REFERENCES

1. 10 CFR50.69, "*Risk-Informed Categorization and Treatment of Structures, Systems and Components for Nuclear Power Reactors," May 16, 2003.*
2. NUMARC 93-01, Rev. 3, "*Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plant's," February 2002.*
3. NEI 00-04 (Draft), "*10 CFR 50-69 SSC Categorization Guideline*," October 2003.
4. Regulatory Guide 1.174, "*An Approach for using Probabilistic Risk Assessment in Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis*," July 1998.
5. Regulatory Guide 1.177, "*An Approach for Plant-Specific Risk-Informed Decisionmaking: Technical Specification,*" August 1998.
6. Regulatory Guide 1.175, "*An Approach for Plant-Specific Risk-Informed Decisionmaking: Inservice Testing," August 1998.*
7. Regulatory Guide RG 1.200 For Trial Use, *"An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," December 2003.*

Figure 1

Surveillance Frequency Control Program Process