

POLICY ISSUE
INFORMATION

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TO: The Commissioners
FROM: William D. Travers
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SUBJECT: SUMMARY OF ACTIVITIES RELATED TO GENERIC SAFETY ISSUES

- PURPOSE:
- BACKGROUND:
- DISCUSSION:
 - Reactor GSIs
 - Non-Reactor GSIs
 - Assessment of Processes
- CONCLUSION:

PURPOSE:

To provide the annual summary of activities related to generic safety issues (GSIs).

BACKGROUND:

It has been the practice of the staff to provide the Commission with an annual update of the progress made in resolving GSIs. This practice was reinforced by the Commission in a Staff Requirements Memorandum (SRM) of May 8, 1998, in response to SECY-98-030, "Implementation of DSI-22, Research." In this SRM, the Commission directed the staff to provide an annual summary of activities related to open reactor and non-reactor GSIs.

The current structure of the reactor Generic Issues Program was established in the 1980s and was intended to address the resolution of reactor GSIs and environmental issues, improvement in the licensing process, and the elimination of requirements that are overly conservative or unnecessarily restrictive or costly. The NRC process for addressing reactor generic issues from all sources, operational and non-operational, was approved by the Commission in 1983 and is delineated in NUREG-0933, "A Prioritization of Generic Safety Issues."

Up to 1995, the Generic Issues Program focused only on GSIs related to nuclear power plants. However, following a December 19, 1995, Commission briefing on mechanisms for addressing GSIs, the staff was requested to expand the program to include non-reactor GSIs identified by the Office of Nuclear Material Safety and Safeguards (NMSS). The NRC process for addressing non-reactor generic issues from all sources, operational and non-operational, is delineated in NMSS Policy and Procedures Letter 1-57, Rev. 1, October 1997.

In addition to the processes documented in NUREG-0933 and NMSS Policy and Procedures Letter 1-57, Management Directive 8.5, "Operational Safety Data Review," addresses the roles of each affected office in the identification of generic issues resulting from the review of operational data.

In 1998, the staff conducted a self-assessment of the generic issues processes and recommended changes to improve efficiency, timeliness, and clarity. Whereas the original process contained six steps (discussed below), the proposed revised process will contain eight steps with the following changes: (1) the prioritization step, in which the relative priority ranking of high, medium, low, and drop was used to determine whether resources should be assigned to an issue, will be replaced by two steps, initial screening and technical screening, in which a determination will be made to continue work on an issue or drop it; (2) the resolution step will be replaced by two steps, a technical assessment step and a regulations and guidance development step; and (3) the imposition step will be replaced by a regulation and guidance issuance step. A new Management Directive 6.4, "Generic Issue Program," was developed by the staff to institute these changes. The revised process addresses adequate protection issues, substantial safety enhancement, and burden reduction initiatives. The staff is performing a trial application of this new process, as recommended by the Advisory Committee on Reactor Safeguards (ACRS), and is expected to report its findings to the ACRS by the end of 2000. Generic issues identified after March 1999 are being evaluated with the proposed revised process.

DISCUSSION:

Reactor GSIs

The original process for addressing reactor GSIs delineated in NUREG-0933 consists of six steps: identification, prioritization, resolution, imposition, implementation, and verification. Generally, safety concerns associated with operating events, research results, or risk assessments form the basis for the identification of GSIs by the staff, the ACRS, industry, or the public. After a

GSI is identified, it is prioritized to determine whether resources should be expended in pursuit of a resolution. GSIs associated with nuclear reactor power plants are prioritized by the Office of Nuclear Regulatory Research (RES) using the methodology of NUREG-0933. The prioritization step is generally completed with a quantitative analysis of the risk reduction potential of the issue and a priority ranking of HIGH, MEDIUM, LOW, or DROP. GSIs with rankings of HIGH or MEDIUM would be able to meet the "substantial increase in the overall protection of the public health and safety" requirement of 10 CFR 50.109 and are selected for resolution. No additional action is taken on reactor GSIs in the LOW-priority and DROP categories.

Upon completion of the prioritization step, all reactor GSIs that meet the requirement of substantial increase in public health and safety are assigned for resolution by the RES Director, with the majority of these assignments made to RES. The Office of Nuclear Reactor Regulation (NRR) is assigned those reactor GSIs that require extensive interface with operating plants. Resolution of a reactor GSI requires a cost-benefit analysis of a proposed solution after consideration of the options to improve safety. Some action is taken on those for which the cost-benefit analysis shows that "the direct and indirect costs are justified in view of this increased protection" (10 CFR 50.109). The ACRS normally reviews the prioritization and resolution of GSIs associated with nuclear power plants. The schedules for the resolution of GSIs allow adequate time for ACRS review and resolution of ACRS comments.

In the imposition step, the staff issues requirements that may result from the resolution of the GSI, and the affected licensees are required to prepare schedules for implementing these requirements. Implementation covers the step in which the affected licensees perform actions on their operating plants to satisfy the commitments made during the imposition step. Finally, verification is accomplished by NRC inspection of licensee actions.

RES is responsible for: (1) resolving GSIs through the conduct of research; (2) tracking the status of all generic issues through the identification, prioritization, and resolution steps in the agency-wide Generic Issue Management Control System (GIMCS); and (3) documenting the prioritization and resolution results in NUREG-0933 and making it publicly available on the NRC Website. In addition to resolving some GSIs, NRR is responsible for managing the imposition, implementation, and verification of those GSIs that result in new requirements. Tracking GSIs through these final three steps is accomplished with the Safety Issues Management System (SIMS).

The following is a summary of the activities related to reactor GSIs since the last report to the Commission in [SECY-99-185](#). All GSIs identified before March 1999 continue to be evaluated in accordance with the original process.

- One new reactor GSI (187 - The Potential Impact of Postulated Cesium Concentration on Equipment Qualification in the Containment Sump) was identified for initial screening using the proposed revised process. This new GSI is scheduled to complete technical screening by December 2000.
- One GSI was prioritized with a HIGH priority (156.6.1 - Pipe Break Effects on Systems and Components)
- Six GSIs (three HIGH priority and three MEDIUM priority) were resolved with no new or revised requirements for licensees (Attachment 1). The resolution of these six GSIs was reported to Congress in monthly reports on the Reactor Generic Issue Program. Currently, seven HIGH-priority reactor GSIs remain to be resolved and the schedules for the resolution of these issues are listed in Attachment 2.

Non-Reactor GSIs

For non-reactor GSIs, NMSS is responsible for managing all six steps of the program described above, in accordance with the guidelines of NMSS Policy and Procedures Letter 1-57, Rev. 1. The status of the unresolved GSIs is tracked by RES in the GIMCS.

The following is a summary of the activities related to non-reactor GSIs since the last report to the Commission in [SECY-99-185](#):

- No new non-reactor GSIs were identified for prioritization.
- Two GSIs (one HIGH priority and one MEDIUM priority) were resolved with no new or revised requirements for licensees (Attachment 1). Currently, four non-reactor GSIs remain to be resolved and the schedules for the resolution of these issues are listed in Attachment 2.
- NMSS is conducting an office-wide review of all the safety issues that have arisen in the past 18 months to determine whether they should be resolved and tracked as GSIs. Those safety issues identified as GSIs will be entered into the GIMCS. NMSS will manage these GSIs using the six-step process, and propose a resolution schedule for the "high" and "medium" GSIs. The outcome of this ongoing effort will be incorporated into the next annual summary report on activities related to GSIs.

Assessment of Processes

The ACRS was briefed on the revised process and the new Management Directive 6.4, and ACRS comments were incorporated. Consistent with the ACRS recommendation, the staff is implementing a trial application of the new directive.

CONCLUSION:

Since the last report to the Commission in July 1999, the staff prioritized and resolved a combined total of seven reactor and two non-reactor GSIs. The staff will continue to use the processes of NUREG-0933 and NMSS Policy and Procedures Letter 1-5, Rev. 1, as well as the procedures of Management Directive 8.5, to identify, prioritize, and resolve reactor and non-reactor GSIs until the new process delineated in Management Directive 6.4 is approved by the Commission. The staff will continue to provide an annual update to the Commission and will inform the Commission of any significant results of the ongoing assessment.

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Attachments: 1. [GSIs Prioritized and Resolved since July 16, 1999](#)
2. [Unresolved GSIs as of June 14, 2000](#)

ATTACHMENT 1

GSIs Prioritized and Resolved Since July 16, 1999

| GSI Number | Title | Identification Date | Priority | Lead Office | Status |
|------------|---|---------------------|----------|-------------|---|
| 23 | Reactor Coolant Pump Seal Failures | 12/1980 | HIGH | RES | Resolved. No additional generic regulatory requirements were found to be necessary. Plant-specific backfits will be pursued based on the NRC's plant-by-plant risk analysis of the loss of component cooling water/essential service water systems. The staff will work with the industry to develop additional RCP seal models to support future risk-informed licensing decisions. |
| 145 | Actions to Reduce Common Cause Failures | 09/1988 | HIGH | RES | Resolved. No additional regulatory requirements were found to be necessary. The staff developed a common cause failure (CCF) database and analysis software package to aid in system reliability analyses and related risk-informed applications. The industry was informed of the availability of the CCF database in Regulatory Issue Summary 99-03. |
| 156.6.1 | Pipe Break Effects on Systems and Components | 02/1991 | HIGH | RES | Re-prioritized with a HIGH-priority ranking for resolution. The technical approach for resolution of this issue has been developed (see Attachment 2) and is currently under RES management review. A meeting with NRR is planned by July 31, 2000, to obtain their view and comment on the approach. A detailed Task Action Plan will be developed based on the results of the NRR review and comment. |
| 158 | Performance of Safety-Related Power-Operated Valves Under Design Basis Conditions | 09/1991 | MEDIUM | RES | Resolved. No additional regulatory requirements were found to be necessary. The staff concluded that existing regulations are adequate to address the performance of safety-related power-operated valves under design basis conditions. |
| 190 | Fatigue Evaluation of Metal Components for 60-Year Plant Life | 08/1996 | HIGH | RES | Resolved. No additional regulatory requirements were found to be necessary. This conclusion was based on probabilistic analyses performed by the staff that showed low core damage frequencies resulting from fatigue failure of metal components. However, the nature of age-related degradation indicates the potential for an increase in the frequency of pipe leaks as plants continue to operate. Therefore, consistent with 10 CFR 54.21, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants: Contents of Application - Technical Information," licensees will have to address the effects of the reactor coolant system environment on component fatigue life, as aging management programs are formulated in support of license renewal. |
| B-17 | Criteria for Safety- | 06/1978 | MEDIUM | RES | Resolved. No additional regulatory requirements were found to be necessary based on the staff's conclusion that the following actions |

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| | Related Operator Actions | | | | taken by licensees, in response to regulatory requirements resulting from other programs that were issued since the issue was identified, addressed the safety concern: enhanced operator training and licensing requirements, including plant-specific simulators; improved training, based on the Systems Approach to Training for all covered staff; implementation of symptom-based emergency operating procedures; and the completion of the Individual Plant Examination (IPE) Program at all operating plants. |
| B-55 | Improve Reliability of Target Rock Safety Relief Valves | 06/1978 | MEDIUM | NRR | Resolved. No additional regulatory requirements were found to be necessary. This conclusion was based on the staff finding that licensees had significantly improved the performance of Target Rock safety relief valves, and continue to evaluate and improve their performance. Licensee compliance with existing regulations, such as 10 CFR 50 Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," and 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," are sufficient for the staff to pursue additional improvements on a plant-specific basis, if needed. |
| NMSS-8 | Year 2000 Computer Problem - Non-reactor Licensees | 05/1998 | HIGH | NMSS | Resolved. Health and safety were not compromised at materials licensee facilities due to the transition into the year 2000 or by the Leap Day (February 29, 2000). A lessons learned report and Generic Letter 98-03 closeout report were issued. |
| NMSS-15 | Adequacy of Part 150 Criticality Requirements | 06/1998 | MEDIUM | NMSS | Resolved. SECY-99-272 issued November 23, 1999, recommended revising the Agreement State compatibility requirements in 10 CFR Part 61 and issuing new emplacement criticality guidance. In a Staff Requirements Memorandum dated January 5, 2000, the Commission disapproved the staff's proposal and directed the staff to stop work on the issue. The Commission concluded that the theoretical scenarios developed by the staff were unrealistic and failed to justify further efforts. |

ATTACHMENT 2

Unresolved GSIs as of June 14, 2000

| GSI Number | Title | Identification Date | Priority | Lead Office | Status |
|------------|--|---------------------|----------|-------------|---|
| 156.6.1 | Pipe Break Effects on Systems and Components | 02/1991 | HIGH | RES | This issue addresses the safety concern of whether the effects of pipe breaks inside the containment have been adequately addressed in the designs of some plants. A technical approach for resolving this issue has been developed. The staff is currently planning a meeting with NRR by July 31, 2000, to discuss the approach. The Task Action Plan should be completed by October 2000 if NRR is in basic agreement with the technical approach. |
| 163 | Multiple Steam Generator Tube Leakage | 06/1992 | HIGH | NRR | This issue addresses the safety concern associated with multiple steam generator tube leaks during a main steam line break that cannot be isolated. An ad hoc panel has been established to address a DPO related to this issue, and will make recommendations to the EDO for its resolution. NRR will develop a Task Action Plan for resolving this GSI after reviewing the EDO findings on the DPO. This action plan is scheduled to be completed by August 2000. |
| 168 | Environmental Qualification of Electrical Equipment | 04/1993 | HIGH | RES | Accelerated-aging tests on electrical equipment showed that some of the environmentally qualified cables either failed or exhibited marginal insulation resistance. Failure of the cables during or following a design basis event could affect the performance of safety functions. LOCA tests are being conducted and the issue is scheduled to be resolved in December 2000. |
| 170 | Reactivity Transients and Fuel Damage Criteria for High Burn-up Fuel | 01/1995 | HIGH | RES | Work on the technical basis (i.e., fuel damage criteria at high burn-up) for a possible resolution is ongoing, and includes cooperative research with EPRI. Development of a technical basis for a possible resolution involves a long-term research effort. |

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| 172 | Multiple System Responses Program (MSRP) | 10/1989 | HIGH | RES | Work performed by the industry is being reviewed to determine whether it adequately resolves the issue without new or revised requirements. Resolution is scheduled for February 2002. |
| 173.A | Spent Fuel Storage Pool: Operating Facilities | 02/1996 | HIGH | NRR | NRR has requested ACRS concurrence on its proposal to close the GSI with no new requirements. If the ACRS agrees, with this proposal, resolution of this GSI is expected to occur by August 2000, otherwise, a modified schedule will be developed. |
| 191 | Assessment of Debris Accumulation on PWR Sump Performance | 09/1996 | HIGH | RES | Development of a technical basis for a possible resolution involves a long-term research effort on coatings and debris transport to determine the potential severity of PWR sump blockage effects. Resolution is scheduled for September 2001. |
| NMSS-7 | Criticality Benchmarks Greater than 5% Enrichment | 05/1998 | LOW | NMSS | The staff is developing and confirming the adequacy of tools for validating criticality calculations, including requests to process higher enrichments, to be used in licensing nuclear facilities. There is no scheduled resolution date. |
| NMSS-10 | Troxler Gauge Source Rod Weld Failures | 05/1998 | MEDIUM | NMSS | The staff will work with the Agreement State of North Carolina to ensure that cracked source rods on Troxler moisture density gauges are repaired or replaced, and ensure the manufacturing process is reviewed and, as appropriate, modified to reduce the potential for recurrence. Resolution is scheduled for July 2000. |
| NMSS-14 | Surety Estimates for Groundwater Restoration at In-Situ Leach Facilities | 06/1998 | MEDIUM | NMSS | This task is to develop a methodology for estimating the cost of groundwater restoration. The project is currently on hold. It will be reevaluated to determine if it should be modified or terminated, in response to a Commission response to SECY-99-013, regarding redefinition of regulatory responsibility at in-situ leach facilities. There is no scheduled resolution date. |
| NMSS-16 | Adequacy of 0.05 Weight Percent Limit in Part 40 | 06/1998 | MEDIUM | NMSS | The staff will determine whether the limit on "unimportant quantities" of source material adequately protects public health and safety. Options forwarded to the Commission on how to proceed with jurisdictional and technical issues on the regulation of source material were approved. There is no scheduled resolution date. |