INSPECTION PROCEDURE 95003

SUPPLEMENTAL INSPECTION RESPONSE TO ACTION MATRIX COLUMN 4 (MULTIPLE/REPETITIVE DEGRADED CORNERSTONE) INPUTS

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PROGRAM APPLICABILITY: IMC 2515B, IMC 2201B

CORNERSTONES: ALL

INSPECTION BASIS: IMC 0308 Attachment 2

95003-01 INSPECTION OBJECTIVES

01.01 To promptly determine if continued facility operation is acceptable and/or if interim regulatory actions are warranted to arrest declining plant performance prior to the completion of this supplemental inspection.

01.02 To ensure that the root- and contributing causes of significant individual and collective performance issues, including the greater-than-green inputs and other issues that resulted in the licensee's transition to Column 4 of the Reactor Oversight Process (ROP) Action Matrix, are understood.

01.03 To independently assess and ensure that the licensee's extent-of-condition and extent-of-cause evaluations for performance issues are adequate and that the results are used to identify appropriate corrective actions that ensure an adequate margin of safety and security.

01.04 To independently assess the adequacy of the programs and processes used by the licensee to prevent, identify, evaluate, and correct performance issues.

01.05 To independently evaluate the adequacy of programs and processes in the affected Strategic Performance Areas (SPAs) associated with the performance issues.

01.06 *To evaluate the licensee's third-party safety culture assessment and conduct an independent assessment of the licensee's safety culture.* [C1].

01.07 To ensure that completed corrective actions to address and preclude repetition of performance issues, including the issue that resulted in transition to Action Matrix Column IV, are timely and effective.

01.08 To ensure that planned corrective actions to preclude repetition direct timely and effective actions to address and preclude repetition of significant individual and collective performance issues including the issue that resulted in transition to Action Matrix Column IV.

01.09 To determine whether the NRC's Reactor Oversight Process appropriately monitored and responded to declines in licensee performance prior to the performance issues that resulted in the licensee's transition to Column 4 of the ROP Action Matrix.

95003-02 INSPECTION REQUIREMENTS

02.01 General Requirements

a. Implement the general requirements and guidance in Inspection Manual Chapter (IMC) 2515 Appendix B, “Supplemental Inspection Program.” Specific general requirements and guidance outlined in IMC 2515, Appendix B, includes:

- Enhanced Inspection, Assessment, and Successful Completion (2515B-07)
- Initiating, Delaying, Suspending, or Expanding Inspection (2515B-08)
- Findings, Violations, General- and Significant Weaknesses (2515B-09)
- Inspection Requirements, Licensee Regulatory Obligations, and ROP Expectations (2515B-10)
- Follow-up Inspection of Planned Corrective Actions (2515B-11)

b. Unless already satisfied by a recent redundant effort, conduct a prompt preliminary IP 95003 inspection to assess risk-significant issues and determine whether continued facility operation is acceptable and/or whether interim regulatory actions are warranted to arrest declining plant performance prior to the completion of the full supplemental IP 95003 inspection.

c. Assess the licensee’s problem identification, causal analysis, and corrective actions to ensure the causes of the performance issues that resulted in the licensee’s transition to Column 4 of the ROP Action Matrix are correctly identified and corrective actions are timely and adequate to effectively address and preclude repetition.

d. Obtain a comprehensive understanding of the depth and breadth of safety, security, organizational, and performance issues.

e. In satisfying objectives 01.02 and 01.04 and requirements 02.03 and 02.04, to the extent possible, avoid replication of prior completed inspections that reviewed the performance issues that led to the transition to Column 4 of the NRC’s ROP Action Matrix.

f. Key terminology used in this supplemental IP is explicitly defined in IMC 2515, Appendix B, Section 04, “Definitions.” Use this terminology, as defined. Licensee terminology may vary.

g. Consider IMC 2515 Appendix B, “Supplemental Inspection Program,” Attachment 2, “Supplemental Inspection Best Practices.”

02.02 Team Staffing and Responsibilities

a. The inspection team must be staffed, primarily from other regional offices and/or headquarters, with a team leader, inspectors, and qualified safety culture assessors (SCAs).

b. The duties and responsibilities of the team leader and other team members are discussed in Section 03.02 of this procedure.

c. Due to the administrative burden associated with team logistics and tracking, some administrative, non-inspection staff may be needed to support the team.

02.03 Problem Identification and Causal Evaluation Assessment

a. Determine whether the licensee's problem identification and causal evaluation documented the performance issues that resulted in the licensee's transition to Column 4 of the ROP Action Matrix.

b. Determine whether the causal evaluation documented who (e.g., licensee-identified, self-revealed, or NRC identified) and under what conditions the performance issues were identified.

c. Determine whether the causal evaluation documented when and for how long the performance issues existed and prior opportunities for identification.

d. Determine whether the causal evaluation documented significant plant-specific consequences and compliance concerns associated with the performance issues both individually and collectively.

e. Determine whether the causal evaluation was performed using a systematic methodology to identify the root- and contributing causes.

f. Determine whether the causal evaluation was conducted to a level of detail commensurate with the significance and complexity of the performance issues.

g. Determine whether the causal evaluation considered prior occurrences of the performance issues and industry operating experience.

h. Determine whether the causal evaluation identified the extent-of-condition and extent-of-cause of the performance issues.

i. When inspecting multiple significant inputs in an SPA, examine the common-cause analyses for potential programmatic performance weaknesses.

02.04 Independent Assessment of Extent-of-Condition and Extent-of-Cause

a. Develop an inspection plan using IMC 2515, Appendix B, Attachment 1, to facilitate an independent assessment of the licensee extent-of-condition and extent-of-cause analysis and the conclusions associated with the significant individual and collective performance issues.

b. Assess whether the licensee's extent-of-condition and extent-of-cause evaluations address the Key Attributes within the cornerstone(s) associated with the significant performance issues. This independent assessment and results will be documented in the supplemental inspection report.

02.05 Review of Licensee Control Systems for Identifying, Assessing, and Correcting Performance Deficiencies

Once significant performance concerns have been identified in the ROP Action Matrix, the NRC must ensure that licensee systems for identifying, assessing, and correcting performance deficiencies are sufficient to prevent further performance degradations[1].

[1] Consider IMC 2515 Appendix B, Attachment 2 – Supplemental Inspection Best Practices pertaining to Emphasis on Observations of In-Plant Activities.

The following inspection requirements evaluate whether licensee programs are sufficient to prevent further declines in safety that could result in unsafe operation.

a. Determine whether licensee evaluations and corrective actions for the significant performance issues are sufficient to correct the issues and preclude repetition.

b. Evaluate the effectiveness of audits and assessments performed by the licensee's Quality Assurance group, line organizations, and external organizations. Focus on how the performance data is integrated with other data to arrest declining performance. This review will include the organization's response to Emergency Preparedness (EP) related corrective actions identified as a result of actual events, exercises, and drills.

c. Determine whether the process for allocating resources appropriately considers safety and compliance, and whether appropriate consideration is given to maintenance backlog management and correction of plant workarounds.

d. Evaluate whether licensee performance goals are congruent with the corrective actions planned and implemented to address the documented performance issues.

e. Through a review of the licensee's Employee Concerns Program (ECP) and the results of surveys or other workplace environment evaluations, ensure that employees feel free to raise safety concerns and that concerns entered into the ECP receive appropriate attention.

f. Determine whether there is a mechanism for the workforce to suggest improvements and explain their disagreements with the technical resolution of issues. Determine whether there is a feedback mechanism in which the evaluation of issues and follow-up corrective actions are reported back to the identifying workers.

g. Evaluate the effectiveness of the licensee's use of operating experience.

02.06 Degraded SPA Identification and Inspection Preparation

a. Identification of Significantly Degraded SPAs

1. The region and inspection team leader are responsible for identifying the SPAs (i.e., Reactor Safety, Radiation Safety, and/or Safeguards) in which performance has significantly degraded through the identification of greater-than-green inputs. For each identified SPA, complete corresponding Section 02.07, 02.08, and/or 02.09 of this IP. Upon completion, all Key Attributes in each significantly degraded SPA will have been examined. Complete subsequent sections of this IP as directed in each section.

2. In consultation with the Director of the Office of the Chief Nuclear Reactor Inspector (CNRI), the Regional Administrator can approve expansion of the inspection scope to include all or some of the Key Attributes of the non-degraded SPAs. This determination should be based on an assessment of identified weaknesses in the Key Attributes and a determination that scope expansion is warranted despite the lack of greater-than-green input in that SPA. The basis for the selection of additional Key Attributes in non-degraded SPAs for inspection will be documented in the inspection plan.

3. Consider implementing Attachment 95003.01, “Additional Emergency Preparedness Cornerstone Inspection.” Attachment 95003.01 must be implemented if EP Cornerstone performance issues contributed to a degraded Reactor Safety SPA. Consider assigning an EP inspector from a different region or headquarters to assist in the performance of Attachment 95003.01.

b. Inspection Preparation

1. Develop an information database to perform a comprehensive corrective action effectiveness review.

(a) Compile performance information on degraded SPAs from the licensee’s corrective action program, audits, self-assessments, licensee event reports (LERs), NRC inspection reports, and the Plant Issues Matrix for a time period determined by the team lead. To the extent possible maximize the use of electronic data and avoid unnecessary data requests.

(b) Review the compiled information and sort the issues by SPA, cornerstone, and Key Attribute. Licensee corrective actions for the issues will be assessed as part of the Key Attribute reviews.

(c) Focus on licensee audits and self-assessments that identify programmatic weaknesses and/or assess the quality of licensee programs. Search for trends indicative of programmatic weaknesses. Requirements for reviews and audits are typically documented in the plant Technical Specifications. Utilize staff with experience or training commensurate with the scope, complexity, or unique nature of the activities audited and/or assessed.

2. Select a system or multiple systems for focused inspection using the plant-specific individual plant evaluation (IPE) and performance insights developed to date.

3. Review inspection reports and critique findings from applicable event responses and drills.

4. Review corrective actions related to recent findings and audits. Add any identified concerns to the IP 95003 Inspection Plan.

5. While the inspectors will focus on selected systems, programs and processes, other areas may be reviewed as necessary to assess licensee performance applicable to the Key Attributes.

6. Consider the procedures listed in IMC 2515, Appendix B, Attachment 1, “Suggested IPs for Reference Use in Assessing Extent of Condition in IPs 95002 and 95003” for evaluating extent-of-condition issues.

02.07 Reactor Safety SPA Assessment

This section is associated with the Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness Cornerstones.

a. Key Attribute - Design Control

Independently assess the extent of risk-significant design issues by performing the following inspection requirements. The review must include the as-built design features of the selected system to verify its capability to perform its safety function(s). Focus on system modifications rather than original system design.

1. Assess the effectiveness of corrective actions for design-related deficiencies.

2. Select several modifications to the system for review and determine if the system is capable of functioning as specified by the current design and licensing basis documents, regulatory requirements, and commitments.

3. Determine if the system is operated consistent with the design and licensing basis documents.

4. Assess the interfaces between engineering, plant operations, maintenance, and the plant support groups.

b. Key Attribute - Human Performance

Team members reviewing this Key Attribute must coordinate their work to ensure that the following inspection requirements are completed:

1. Using data from the licensee's corrective action program, LERs, and audits, determine if human performance errors have contributed to performance issues.

2. Evaluate the overall effectiveness of human performance-related corrective actions.

3. Determine if plant issues were reviewed by the appropriate level of management and prioritized according to their safety significance.

4. Evaluate whether corrective actions to address plant issues were adequate and implemented in a timely manner.

5. Assess the effectiveness of corrective actions for identifying, evaluating, and correcting deficiencies involving human performance.

6. Review specific problem areas and issues identified by inspections to determine if concerns exist in the human performance cross-cutting area as discussed in IMC 0310, "Aspects Within Cross-Cutting Areas."

7. Conduct Emergency Response Organization (ERO) Performance-Drills in accordance with IP 82001, "Evaluation of Emergency Preparedness," with a sampling of shift crews and management teams to assess their ability to implement the Emergency Plan.

c. Key Attribute - Procedure Quality

Determine the technical adequacy of procedures by completing the following inspection requirements.

1. Assess the effectiveness of corrective actions for deficiencies involving procedure quality.

2. Evaluate the quality of procedures and, as applicable, determine the adequacy of the procedure development and revision processes.

3. Compare a sample of Emergency Plan Implementing Procedure (EPIP) changes with the requirements of the Emergency Plan and corrective action assessments. Determine if the EPIP change process is adequate for correcting EPIP-related deficiencies and maintaining Emergency Plan commitments in EPIP instructions.

d. Key Attribute - Equipment Performance

Determine whether the licensee is adequately maintaining and testing the functional capability of risk-significant systems and components by completing the following inspection requirements:

1. Assess the effectiveness of corrective actions for deficiencies involving equipment performance, including equipment designated for increased monitoring by the Maintenance Rule.

2. Determine if the licensee has effectively implemented programs for the performance of surveillance testing, post-maintenance testing, and equipment calibration.

3. Assess the operational performance of the selected safety systems to verify safety function performance capabilities.

4. Compare a sample of EP-related equipment and facilities (including communications equipment) to Emergency Plan commitments. Review the adequacy of the surveillance testing program to maintain EP equipment and facilities. Assess the correction of deficiencies identified by the surveillance program.

5. Assess decision-making regarding long-standing equipment issues (i.e., whether appropriate decisions were made and whether these decisions support long-term equipment reliability).

6. For any unresolved long-term equipment issues, determine whether inadequate resources were a cause or contributing cause to any inappropriate delay in resolving those issues.

e. Key Attribute - Configuration Control

Determine whether the licensee is maintaining risk-significant systems and the principal fission product barriers in configurations which support their safety functions by completing the following inspection requirements:

1. Assess the effectiveness of corrective actions for deficiencies involving configuration control.

2. Perform a walkdown of the selected systems. In addition, if the selected systems do not directly have a containment over-pressure safety function (such as containment spray), conduct an additional review of such a system.

   (a) Independently verify that the selected safety systems are in the proper configuration through a system walkdown.

   (b) Review temporary modifications to ensure proper installation in accordance with the design information.

3. Determine whether the work control process adequately considers risk during the planning and scheduling of maintenance and surveillance testing activities, and the control of emergent work.

4. Determine whether the primary and secondary chemistry control programs adequately control the quality of plant process water to ensure the long-term integrity of the reactor coolant pressure boundary.

5. Assess the programs and controls (e.g., tracking systems) in place for maintaining knowledge of the configuration of the fission product barriers including containment leakage monitoring and tracking, containment isolation device operability (e.g., valves, blank flanges, etc.), and reactor coolant leak rate calculation and monitoring.

6. Review the results of the plant specific IPE relative to the systems selected. Determine if the IPE is being maintained to reflect actual system conditions regarding system capability and reliability.

f. Key Attribute - Emergency Response Organization Readiness

Determine the readiness of the licensee's emergency response organization to respond to plant emergencies by completing the following inspection requirements:

1. Assess the effectiveness of corrective actions for deficiencies involving ERO readiness.

2. Verify adequate staffing in accordance with the Emergency Plan to respond to emergencies.

3. Verify the capability to activate and staff the emergency response facilities in accordance with the licensee's Emergency Response Plan

4. Verify the licensee's ability to meet Emergency Plan requirements for activation by performing IP 71114.03, "Emergency Preparedness Organization Staffing and Augmentation System." If this IP has been performed recently, exercise judgment whether to repeat this IP as part of the IP 95003 inspection effort. If Attachment 95003.01 is being implemented, consider the additional requirements under this Key Attribute.

02.08 Radiation Safety SPA Assessment

This section is associated with the Public Radiation Safety and Occupational Radiation Safety Cornerstones.

a. Occupational Radiation Safety Cornerstone.

1. Key Attribute – Programs and Processes for Occupational Radiation Safety.

Determine whether the licensee is effectively implementing Radiation Protection (RP) programs and process by completing the following inspection requirements:

(a) Assess the RP organization to ensure that the assignment of duties, authorities, and responsibilities are clearly defined and that the scope of program and the staffing are adequate.

(b) Evaluate the technical adequacy of several implementing procedures from three or more programmatic areas (e.g., job controls/coverage, surveys, radiation work permit (RWP) issuance, etc.). Focus on problem areas identified in previous inspections. Evaluate the adequacy of the procedure development process.

(c) Observe planned work activities in high radiation, high airborne, and/or high contamination areas and assess the effectiveness of the work planning, coordination, implementation, and identification and use of lessons learned.

(d) Assess the adequacy and implementation of controls to the radiological source term and quality of related chemistry controls.

(e) Assess the adequacy and implementation of radiological controls to work planning, focusing on outage maintenance periods.

(f) Assess the effectiveness and degree of management support and integration of dose management practices into facility craft work units to keep doses below regulatory limits during work activities.

2. Key Attribute - Plant Facilities, Equipment, and Instrumentation for Occupational Radiation Safety

Complete the following inspection requirements in this Key Attribute:

(a) Evaluate the technical adequacy of several implementing procedures from three or more programmatic areas (e.g., survey instrument calibration, self-contained breathing apparatus maintenance, etc.). Focus on problem areas identified in previous inspections. Evaluate the technical adequacy of the procedure development process.

(b) Observe several planned equipment maintenance or calibration activities. If possible, focus on equipment used in high-risk areas (e.g., high radiation areas, high airborne contamination areas, potentially oxygen-deficient, immediately dangerous to life or health (IDLH) areas, etc.).

(c) Assess the level of management support for maintaining adequate equipment and support facilities.

(d) Review any recommendations for plant improvements to support radiation safety and determine whether the recommendation decisions supported occupational radiation safety.

3. Key Attribute - Human Performance for Occupational Radiation Safety

(a) Assess the licensee's effectiveness in identifying, evaluating, and correcting deficiencies involving human performance.

(b) Review specific problem areas and issues identified by inspections and determine if concerns exist in the human performance cross-cutting area as detailed in IMC 0310.

b. Public Radiation Safety Cornerstone.

1. Key Attribute - Plant Facilities, Equipment, and Instrumentation for Public Radiation Safety

Perform an extensive tour of the facility and conduct interviews with plant and contractor personnel to evaluate the adequacy of the plant facilities, equipment, and instrumentation. Complete the following inspection requirements in this Key Attribute:

(a) Evaluate the physical condition of the facilities, equipment, and instrumentation. Determine if the facility is appropriate for its intended use and if adverse conditions (i.e., radiation levels, temperature, lighting, industrial hygiene hazards, etc.) that may hamper the performance of the workers are minimized.

(b) Verify that equipment and instrumentation are operable, calibrated, source checked, and maintained as specified in licensee procedures. Where appropriate, verify that alarm and/or trip setpoints are correctly set to satisfy TSs and regulatory requirements.

(c) Assess the computer programs used to perform RP-related tasks. Review the associated technical evaluations to ensure the software is appropriate for its intended use. Verify the computer software has been verified and validated.

(d) Observe the calibration of selected equipment and instruments. Verify that the proper materials, as specified in the calibration procedure, are used. If radioactive sources are being used, determine whether they are properly transported, handled, used, controlled, and stored in accordance with approved plant procedures.

(e) Verify that there is an adequate supply of spare parts and materials on hand to maintain RP equipment and instruments.

(f) Review the results of audits performed during a time period identified by the team. Review deficiency reports (also referred to as incident reports or condition reports) associated with this Key Attribute.

(g) Review any significant facility or equipment changes potentially impacting the Public Radiation Safety cornerstone.

(h) Determine the level of management support for the maintenance of facilities and equipment used to support Public Radiation Safety.

2. Key Attribute – Programs and Processes for Public Radiation Safety

Complete the following inspection requirements in this Key Attribute:

(a) Review the results of audits performed during a time period identified by the team. Review deficiency reports (also referred to as incident reports or condition reports) associated with this Key Attribute.

(b) Assess the quality (i.e., clearly written, contain specific actions, and contain data and record sheets) and technical adequacy of implementing procedures in this Key Attribute. Assess any recent significant changes to program documents and implementing procedures.

(c) Review the records generated from the implementation of the selected procedures and determine if the procedures were adequately implemented.

3. Key Attribute - Human Performance for Public Radiation Safety

Complete the following inspection requirements in this Key Attribute:

(a) Assess the effectiveness of identifying, evaluating, and correcting deficiencies involving human performance.

(b) Review specific problem areas and issues identified by inspections to determine if concerns exist in the human performance cross-cutting area as detailed in IMC 0310.

(c) Observe the performance of activities described in the selected procedures. If the activities are not scheduled to be performed during the inspection, request that the activity be simulated so that worker performance and the adequacy of the procedure can be assessed. The inspector should assess the licensee's schedule for the activity and determine if an observation of the activity can be made during a separate site visit that supports the inspection timeline.

(d) Interview licensee technicians, engineers, health physicists, and supervisors responsible for implementing the Public Radiation Safety program and assess their knowledge of the program and implementing procedures.

02.09 Safeguards SPA Assessment

This section is associated with the Security Cornerstone.

a. Key Attribute - Physical Protection

The objective of the physical protection program is to provide reasonable assurance that licensee security systems and programs have been appropriately developed and are being effectively implemented to assure functionality and reliability against the design basis threat (DBT) of radiological sabotage or the loss or theft of special nuclear material (SNM). This area is based on defense in-depth strategies that are intended to provide protection against both internal and external threats by making effective use of all

security equipment and security measures established to support the security of the facility and the implementation of the licensee's protective strategy. Elements that are critical to the effective implementation of the physical protection program are security officer training and qualifications, weapons testing and maintenance, equipment testing and maintenance, and implementing procedures. Complete the following inspection requirements in this Key Attribute:

1. Verify that the licensee has established and maintains a physical protection program which includes equipment testing and maintenance to support the protection of the facility and the implementation of the protective strategy in accordance with the NRC-approved security plan, regulatory requirements, and any other applicable Commission requirements.

2. Verify that the licensee has established and maintains a security training program that assures security personnel possess the knowledge, skills, and abilities to effectively implement the protective strategy against the DBT of radiological sabotage.

b. Key Attribute - Access Authorization

The personnel screening process for unescorted access is used to verify trustworthiness and reliability of personnel prior to granting unescorted access to the protected area. A failure in the Access Authorization Program can compromise the licensee’s ability to adequately protect against the insider threat of radiological sabotage. Complete the following inspection requirements in this Key Attribute:

1. Verify the licensee’s Access Authorization program provides assurance that individuals granted and maintaining unescorted access are trustworthy and reliable and that the licensee’s behavior observation program and insider mitigation program provides assurance of continued reliability.

2. Verify the licensee has established and maintains a Fitness for Duty program that provides assurance that licensee personnel will perform their tasks in a reliable and trustworthy manner and are not under the influence of any substance, or mentally or physically impaired from any cause that may affect their ability to perform their duties safely and competently.

c. Key Attribute - Access Control

The Access Control program’s function is to prevent the introduction of contraband (i.e., firearms, explosives, and incendiary devices) and unauthorized personnel into the plant that could aid in the attempt to commit radiological sabotage. The failure of the Access Control program could compromise required security measures that are required to protect vital and risk significant plant equipment and functions. Complete the following inspection requirements in this Key Attribute:

1. Verify that the licensee has effective access controls and equipment in place, and that they are designed and functioning as intended to detect and prevent the introduction of contraband or unauthorized personnel into the protected area that could be used to commit or aid in the act of radiological sabotage.

2. Verify that the access control process is implemented to ensure that only those personnel, materials, or vehicles that have been properly screened are granted access to the protected and vital areas.

d. Key Attribute - Cybersecurity

The purpose of the licensee's cybersecurity program is to provide reasonable assurance that the licensee's digital computer and communication systems are adequately protected against cyberattacks. The failure of the cybersecurity program could compromise licensee operations, security, or the ability to respond to emergency events. Complete the following inspection requirement in this Key Attribute:

1. Verify that the licensee's cybersecurity program provides reasonable assurance that computer systems and networks associated with safety, security, and emergency preparedness are adequately protected against intrusion and/or sabotage.

e. Key Attribute - Response to Contingency Events

The purpose of the licensee's contingency response program is to provide reasonable assurance that the licensee can protect identified target sets against the DBT of radiological sabotage. The licensee is required to maintain a response strategy to protect the plant against radiological sabotage and the infrastructure to maintain, update, and implement that strategy. The strategy's objective is to maintain a sufficient force that is properly armed, appropriately trained, and that can be timely positioned to protected positions to interdict and effectively respond to the DBT in order to protect against radiological sabotage. Complete the following inspection requirements in this Key Attribute:

1. Verify that the licensee has established and maintains a contingency response program with the necessary infrastructure to support an adequate protective strategy.

2. Verify through a review of documents and discussions with licensee staff that the licensee has appropriately identified target sets and has developed an adequate protective strategy for those target sets.

3. Verify through the conduct of table-top drills and NRC-evaluated exercises that the licensee's protective strategy effectively responds to the DBT to protect target sets against radiological sabotage.

02.10 The Licensee's Third-Party Safety Culture Assessment Evaluation.

The requirements in this section, as supported by the associated guidance in section 03.10, are to be implemented in evaluating the licensee's third-party safety culture assessment.

a. Inspection Preparation:

1. If possible, engage the licensee and their third-party safety culture assessors prior to the third-party safety culture assessment. This is preferable as it provides the NRC safety culture assessors (SCAs) with the opportunity to evaluate the safety culture assessment methodology. The licensee and third-party SCAs then have the

opportunity to respond to any NRC feedback on the methodology in advance of its implementation. In these cases, engage the licensee and third-party SCAs using the requirements in this section, as informed by associated guidance. Monitor the safety culture assessment implementation, including the issues that are identified.

After the third-party safety culture assessment has been conducted, perform the requirements in Section 02.11 and associated guidance in Section 03.11 to determine the scope of the NRC's graded safety culture assessment. It is important to note that engagement during the third-party safety culture assessment and the subsequent conduct of the NRC's safety culture assessment activities may occur over several months and may need to begin before the on-site NRC IP 95003 inspection.

2. The licensee may have conducted a third-party safety culture assessment before the IP 95003 inspection was initiated. If the licensee chooses not to perform another third-party safety culture assessment, the NRC SCAs will evaluate the most recent third-party safety culture assessment. If the licensee's most recent safety culture assessment was performed more than twelve months prior to the IP 95003 inspection, it is anticipated that the licensee will perform an additional safety culture assessment to obtain more current safety culture information.

3. The lead NRC SCA will request any information needed to support an evaluation of the licensee's third-party safety culture assessment. The lead NRC SCA will also coordinate with the licensee to schedule interviews with the personnel that performed the assessment and licensee staff and managers responsible for the actions taken in response to the assessment.

4. Evaluate any additional safety culture assessments conducted by the licensee within the past five years.

5. Consult IMC 2515 Appendix B, Attachment 2, when preparing for this inspection.

b. Evaluation:

1. Review the licensee's third-party safety culture assessment performed in response to the licensee's transition to Column 4 of the ROP Action Matrix to understand how the assessment was conducted, what the assessment results were, and how the licensee responded to those results.

2. Verify the following associated with the licensee's third-party safety culture assessment:

(a) The assessment included all functional groups, including the functional groups that directly impact safe plant operations (e.g., operations, engineering, maintenance, security) as well as any contract organizations performing those functions.

(b) The assessment included all levels of management responsible for safe plant operation, including corporate senior management.

(c) Sample sizes were sufficient to ensure that assessment results were representative of the functional groups included in the assessment.

(d) Information was collected relating to all safety culture traits. Specifically note any safety culture traits in which no information was collected. If any safety culture traits were not addressed, review any justifications for not assessing those traits.

3. Assess the methods used by the licensee's third-party safety culture assessment team to collect and analyze safety culture data.

4. Verify that the licensee's third-party safety culture assessment team members were not employees or utility operators of the plant. Determine whether they were appropriately qualified to conduct safety culture assessments.

5. Review the results of the licensee's third-party safety culture assessment and determine whether:

   (a) The results were consistent with the data collected.

   (b) The overall conclusions were consistent with the assessment results.

   (c) The reason for any substantial differences between the results from the assessment and the results of similar assessments performed within the previous five years are identified and explained.

6. If the third-party assessment team's follow-up investigation of any weaknesses in the safety culture traits involved sensitive information about the behavior of an individual, and an NRC SCA must review that information or receives such information, the NRC SCA must protect the individual's identity and privacy to the extent possible. The NRC must not disclose to licensee personnel any detailed information about the individual or the related events but must disclose only general conclusions about the thoroughness of the third-party safety culture assessment.

02.11 NRC Graded Safety Culture Assessment Planning

The lead SCA must:

a. Determine the scope of NRC's graded safety culture assessment based on the results of the evaluation of the licensee's third-party safety culture assessment in Section 02.10. Depending on the circumstances, the scope of the graded safety culture assessment may range from focusing on functional groups which the licensee's third-party assessment identified as having problems and/or weakness or were insufficiently evaluated, to performing an assessment of specific safety culture traits, to conducting an NRC independent safety culture assessment.

b. Determine the methods best suited for the safety culture assessment. Prepare the selected data collection tools, such as interview and focus group guides and behavioral observation checklists. Coordinate with other inspection team members to determine how to obtain data from their focus areas to support the safety culture activities.

c. Identify the resource needs for conducting the safety culture assessment. Hold meetings with SCAs and inspectors to provide training, briefings, assignments, guidance, and other relevant information. Establish a plan for communication and coordination among SCAs and inspectors to share data and other information.

d. Follow the guidance in Section 1.i. of Attachment 02, “Guidance for Conducting an Independent NRC Safety Culture Assessment,” and coordinate with the licensee to develop and disseminate a communication plan to site personnel regarding the NRC’s planned safety culture assessment activities.

02.12 NRC Graded Safety Culture Assessment Performance

The lead SCA and the other SCAs, as assigned, must:

a. Conduct the safety culture assessment using the tools developed from Section 02.11.

b. Coordinate with IP 95003 inspection team members to gather insights on safety culture traits that are part of their inspection focus areas. Participate in discussions with the NRC team to synthesize observations and insights and develop findings and conclusions. Collaborate with the NRC team to identify the causes and contributing factors that resulted in the degraded licensee performance.

02.13 NRC Self-Assessment.

Compare the team’s findings with previous performance indicators and inspection program data to determine whether the NRC’s Reactor Oversight Process appropriately monitored and responded to declines in licensee performance prior to the performance issues that resulted in the licensee’s transition to Column 4 of the ROP Action Matrix. Evaluate whether the NRC’s assessment process appropriately characterized licensee performance based on previous information.

The findings, conclusions, and recommendations from this inspection requirement will be documented in a separate non-public report, co-addressed to the appropriate Regional Administrator and the Office Director of CNRI.

95003-03 INSPECTION GUIDANCE

03.01 General Guidance

a. Content shared between multiple supplemental inspection procedures has been relocated to IMC 2515 Appendix B to eliminate redundant and potentially conflicting governance. This procedure should not be implemented without reviewing and complying with referenced IMC 2515, Appendix B governance.

b. Deficient licensee performance of sufficient significance to result in an IP 95003 inspection generally warrants a prompt interim inspection to determine whether (a) continued operation of the facility is acceptable and (b) interim licensee and/or NRC actions are warranted pending completion of the remainder of the IP 95003 inspection and satisfactory completion of licensee corrective actions.

This interim inspection may be waived if: (a) previously documented risk insights in recent supplemental or reactive inspections are determined to remain valid and sufficient to satisfy its purpose, or (b) if the licensee has already signaled readiness for an IP 95003 inspection, having completed unusually timely problem identification, causal analysis, and corrective actions to address and preclude repetition of the significant

individual and collective performance issues that resulted in the transition to Column 4 of the ROP Action Matrix .

c. When assessing the licensee's problem identification, causal analysis, and corrective actions, the inspectors are not required to perform an independent evaluation of the performance issues, nor should they merely verify that an evaluation has been performed and translated into plans and actions without assessing the adequacy of the causal analysis and corrective actions.

   However, as directed in Section 02.04 above, and discussed in Section 03.04 below, licensees subject to Action Matrix Column 4 and IP 95003 should receive greater independent review and increased inspection rigor compared to licensees subject to Column 3 and IP 95002. Also, as with IP 95001 and IP 95002, the inspection requirements relate to the minimum set of information that the NRC will generally require to ensure that the inspection objectives are satisfied. In determining which aspects of the licensee's Problem Identification and Resolution (PI&R) effort to review beyond that required in Sections 2.03 through 2.05, the inspectors may consider a variety of factors including issue complexity, periodic NRC PI&R performance assessment results, and inspection team perceptions of the strengths or weaknesses in the licensee's PI&R performance (e.g., transparency, objectivity, scrutability, documentation, interview clarity and completeness, and conformance to licensee self-imposed standards and regulatory requirements).

d. To promote reliability and clarity, supplemental IP terminology has been clarified and consolidated in IMC 2515, Appendix B. As such, prior to each supplemental inspection, it is important for inspectors to familiarize themselves with IMC 2515, Appendix B including the definitions therein. The purpose is not to focus the inspection on the terminology used by the licensee nor to compel the licensee to adopt the terminology defined in IMC 2515, Appendix B but to promote consistency and clarity in communicating inspection objectives, requirements, guidance, and results to all stakeholders.

e. This procedure provides a framework for conducting a comprehensive assessment of licensee performance in the affected SPAs. As such, although the procedure is broad in scope, it is also designed to focus on areas where performance issues have already been identified. While some inspection should be performed for each Key Attribute, some inspection governance is only applicable if problems are identified in that area.

f. Some of the IP 95003 objectives and requirements partially mirror those in IP 95001 and IP 95002. When an IP 95003 inspection element mirrors a related IP 95001 or IP 95002 inspection element, the overlapping IP 95003 objectives and requirements might be satisfied by a limited scope IP 95003 inspection that augments the recent IP 95001 or IP 95002 inspection. In other circumstances, an IP 95003 inspection may need to satisfy these objectives and requirements more fully and independently.

g. To consolidate inspection activities, the team leader may decide to include a continuous main control room observation as part of the inspection. The results from the main control room continuous observation should satisfy several inspection requirements for the Key Attributes of configuration control, equipment performance, human performance, and procedure quality.

h. Consideration should be given to performing some IP 95003 inspection activities during a plant outage. One situation when an outage inspection should be considered is when

the issues that resulted in the degraded cornerstone or their underlying causes are related to outage activities that cannot be effectively assessed during non-outage periods. The goal of this effort might include evaluations of how well the licensee controls outage activities and shutdown risk; how well they operate the plant during plant shutdown and startup including the quality of the associated plant procedures; and how well the licensee implements plant modifications and maintenance activities.

i. The team leader should ensure that all team members receive "just in time" IP 95003 training that includes the inspection procedure process and methodologies. This training should focus on unique aspects of the IP 95003 inspection. Typical training topics include the increased breadth, depth, level of rigor, and documentation detail relative to other supplemental or baseline inspections; identified site performance issues; site familiarization by the senior resident inspector including site specific terminology; communication of expectations with the NRC's SCAs; an overview of the NRC's independent safety culture assessment process; IMC 2515, Appendix B; and other administrative details. To coordinate this training, contact the Branch Chief of the Reactor Inspection Branch (RIB) of the Division of Oversight and Compliance of CNRI.

j. Inspection Planning and Logistics [2].

1. The decision to perform this inspection is based on the licensee transitioning to Column 4 of the ROP Action Matrix. Based on the documented performance issues and the governance contained in this procedure, the team leader will develop an inspection plan that describes the overall scope of the inspection, team member assignments, and logistics. The team leader will then notify the licensee of the inspection dates and inspection scope and provide the licensee a list of documents required for an initial in-office review. Once the licensee has been notified, the licensee should formally acknowledge readiness for the inspection and when the root cause analysis and third-party safety culture assessment are completed.

2. Prior to the inspection, the team leader will establish a method with the licensee for tracking NRC information requests and potential issues, including weaknesses, findings, and observations that arise during the inspection. The team leader will ensure that the team and the licensee share a common understanding of issues throughout the inspection. The use of a licensee-developed and controlled issue tracking list is highly encouraged. See IMC 0620, "Inspection Documents and Records," for additional guidance.

3. Flexibility is provided to implement IP 95003 depending on site-specific circumstances. The timing and scope of the inspection will align with the NRC's understanding of the site's performance issues. If a plant has transitioned into Column 4 of the ROP Action Matrix in a gradual manner, the NRC may have a sufficient understanding of plant issues to waive a prompt interim inspection, opting instead to await completion of the licensee root cause evaluations and safety culture assessments. Alternatively, should a licensee enter Column 4 of the ROP Action Matrix abruptly (e.g., as a result of a single Red finding), the NRC may initiate a prompt interim IP 95003 inspection to evaluate and document a preliminary NRC assessment of the risk significant performance issues.

[2]Consider IMC 2515 Appendix B, Attachment 2 – Supplemental Inspection Best Practices pertaining to Licensee Readiness for Inspection.

4. Considerations include the benefit to conduct a sequential set of focused functional area inspections as part of the IP 95003 inspection effort. This could include scheduling a sub-group to perform an inspection during a plant outage; and scheduling NRC safety culture assessment activities to engage the licensee during the planning for the third-party safety culture assessment and to observe the conduct of the third-party safety culture assessment. The team leader may consider conducting a number of discrete functional area inspections. If the option is elected to conduct focused functional area inspections, one or more SCAs should accompany each inspection sub-group to facilitate the inclusion of the sub-group's findings and observations into the NRC's safety culture assessment.

5. The team will prepare for the inspection at a location determined by the team leader. During this inspection preparation, the team members will provide input into the inspection plan for their assigned areas and input regarding any other documentation that will be required for on-site review. All samples selected by the team members will be coordinated with and approved by the team leader as part of the inspection plan. This IP 95003 team member inspection preparation phase should require two to three weeks.

6. When the inspection is conducted with the full team, the on-site portion of the inspection should generally consist of two weeks on site, one or two weeks offsite, and a final week on-site. A final licensee debrief should be scheduled for the final day of the on-site inspection. All team members should attend the final de-brief. A public exit meeting should be held approximately three weeks after completion of inspection.

7. When planning for the inspection, to the extent possible, the safety culture assessment activities should be completed concurrent with the other inspection requirements, for the following reasons:

   (a) As inspectors complete inspection requirements, they will compile observations that will be integrated in the safety culture assessment.

   (b) As safety culture assessment team members identify issues related to the inspections, the SCAs should inform the inspectors, so the inspectors may follow-up on those issues during their inspections.

   (c) As inspectors identify issues and make observations that have safety culture implications, the inspectors should inform the SCAs, so the SCAs may redirect or redeploy assessment resources to address those issues and/or incorporate those observations.

8. The team leader should ensure that effective communication mechanisms exist between the inspectors and SCAs responsible for completing the activities described above.

9. Identify documents to complete the assessment of the affected SPA. If an evaluation of the Emergency Preparedness area will be performed using Attachment 95003.01, then also include the documents required to complete the attachment.

03.02 Team Staffing and Responsibilities

a. Staffing of the inspection team should primarily consider diversity of talent, experience, and knowledge of the team. The team should also be comprised of members from other regional offices or headquarters to ensure objectivity and independence. The IP 95003 inspection team leader should have extensive and recent experience in conducting and leading NRC team inspections.

b. Duties and responsibilities for the team leader and inspection team members:

1. The team leader should ensure that an appropriate balance is maintained between determining the depth of previously identified issues and determining the breadth of performance issues within the SPA. Additionally, the team leader should plan and manage the inspection and provide oversight for the safety culture assessment activities including coordinating all interfaces between the inspection team and licensee personnel, NRC management, and public officials.

2. The inspection team should be staffed with an assistant team leader (ATL). The ATL's duties and responsibilities should (1) mirror those of the team leader, and (2) include the majority of the administrative tasks and planning and managing safety culture assessment activities in coordination with the lead SCA.

3. The IP 95003 inspection is a demanding effort, and the team leader should have flexibility to respond to emergent demands for briefing NRC management and public officials as well as maintaining overall cognizance of the inspection effort. The ATL, will assist the team leader to accomplish these responsibilities.

4. It is also desirable to staff the inspection with at least one inspector who has detailed knowledge of the site and plant layout. The assigned resident staff or resident inspector previously assigned to the site should be considered.

5. The SCAs will focus solely on safety culture activities. The number of SCAs assigned to the inspection will depend upon the scope of the NRC safety culture assessment activities.

6. At least one senior reactor analyst (SRA) should be assigned as a full-time team member. The SRA, and other risk experts as appropriate, should conduct a detailed assessment of the individual and collective risk associated with the team's findings.

7. The use of contractor support should be considered for conducting aspects of the system design reviews, for assistance in reviewing the licensee's business and strategic plans, and for assistance in completing the safety culture assessment. The statement of work associated with contractor efforts should specifically include provisions for weekend travel as well as funding for the review and concurrence on the final report.

8. A "team manager" should also be designated for the IP 95003 effort. The team manager should be based in the sponsoring region and should be an SES-level manager. The role of the team manager is to coordinate important senior management briefings and interface with Commission offices and external stakeholders during the inspection. Additionally, the team manager is responsible for

coordinating the acquisition of additional resources to support the IP 95003 inspection effort.

c. Qualification Requirements for SCAs:

1. The team leader should coordinate with the program office to select the lead SCA. The lead SCA will determine the size of the SCA team and members.

2. The lead SCA, in coordination with the team leader, should verify that the SCAs collectively possess the needed education and experience in the following areas:

- Knowledge of methods for gathering safety culture data through: (1) individual and group interviews, (2) structured and unstructured interviews, (3) surveys, (4) behavioral observations and checklists, and (5) case studies;
- Ability to determine the applicability and likely usefulness of various data-gathering methods under different circumstances;
- Ability to implement the different methods correctly, including, but not limited to (1) conducting focus groups and interviews in a manner that elicits the desired information while reducing potential biases in the responses, (2) conducting reliable (i.e., repeatable) structured behavioral observations, and (3) collecting insights from written documentation and verbal communications;
- Knowledge of the requirements for developing, administering, and analyzing the results of surveys and questionnaires, including knowledge of: (1) the strengths and weaknesses of different item types (Likert, BARS, forced-choice, etc.); (2) the requirements for administering a survey to reduce potential biases in the responses; (3) behavioral statistics and the appropriate methods, and their constraints, for analyzing survey data; and (4) statistical requirements for the different types of validity and reliability, and appropriate techniques to assess, measure, and establish them;
- Knowledge of the rationale for a multiple-measures approach and an ability to assess the limitations of a single-method safety culture assessment;
- Knowledge of statistical and conceptual constraints on determining appropriate sample sizes for each method;
- Knowledge of the alternatives for selecting samples for the assessment and the biases introduced by different sample selection strategies;
- Knowledge of theories and research in organizational and human behavior;
- Ability to integrate results from applying the different methods to arrive at defensible conclusions;
- Knowledge of the ROP and applicable inspection requirements and techniques; and
- Knowledge of theory and research in safety culture.

3. The knowledge and experience of the selected SCAs should be evaluated promptly by the lead SCA to identify any training needs. The selected SCAs should complete the identified training before participating in IP 95003 inspection activities.

03.03 Problem Identification and Causal Analysis

a. The purpose of the problem identification and causal analysis is to provide a diagnosis of the principle causes for the decline in performance as well as a prognosis for future improvement. Using the results from this inspection, in conjunction with information

obtained from the NRC's review of previous root cause analyses validated by either a previous IP 95001 or IP 95002 inspection that may have been performed by the licensee or others, the team should group related apparent, root, and contributing causes of the risk-significant performance deficiencies using a structured approach. This analysis should also consider the existing substantive cross-cutting issues and all new findings with cross-cutting areas that are identified from this inspection. The team should also consider insights from the safety culture observations when performing this analysis. The outcome of this analysis should be an identification of the primary causes of the decline in performance and a discussion of how the licensee's improvement and recovery plans will address these causes. At least one representative from each functional area should participate in this analysis. This effort is not intended to be a substitute for a more focused root cause study or self-assessment by the licensee.

b. The SRA should perform an assessment of the individual risk associated with the team's findings. The SRA may also perform a collective risk assessment by qualitatively assessing the risk impacts of multiple independent findings that overlap in time to gain an understanding of the aggregated or collective risk profile. When performing a collective risk assessment, it is important to understand the start and end dates of each inspection finding. Assessing the collective risk from the "roll-up" of multiple related, non-overlapping independent findings identified during the inspection would produce an artificially high estimate of risk leading to incorrect conclusions.

c. This information will be useful in evaluating the adequacy of the licensee's planned corrective actions to address the performance issues, and to aid in deciding if additional regulatory actions are warranted.

03.04 Independent Assessment of Extent-of-Condition and Extent-of-Cause

No additional guidance provided.

03.05 Review of Licensee Control Systems for Identifying, Assessing, and Correcting Performance Deficiencies

a. Assess whether licensee evaluations of significant issues are of a depth commensurate with the significance of the issue. Evaluations should ensure that the root and contributing causes of significant issues are identified. Corrective actions should be taken to correct the immediate problems and to preclude repetition. Include in the samples reviewed the licensee's evaluations associated with great-than-green performance indicators and inspection findings that had not been previously inspected. Use the guidance contained in IP 95001 to help evaluate the adequacy of the licensee's evaluations.

Review any licensee evaluations associated with programmatic performance issues and organizational deficiencies, as well as those related to specific equipment issues. Consider the results of NRC evaluations of licensee root causes performed during IP 71152, "Problem Identification and Resolution."

b. Line organization, quality assurance, and external audits and assessments should be reviewed to determine whether the licensee has demonstrated the capability to identify performance issues before they result in actual events of undesired consequences. The findings in these audits and assessments should be integrated with more quantitative performance metrics and compared to those findings identified during this and other

NRC inspections. Management systems should be in place to process and act upon this performance data as appropriate. The inspectors should evaluate licensee management support to the audit and assessment process, as evidenced by staffing of the quality assurance organization, responsiveness to audit and assessment findings, and contributions of the quality organization to improvements in licensee activities.

With regard to EP related activities, IP 71114.05, "Maintenance of Emergency Preparedness," contains guidance that may be useful in inspecting EP aspects of the PI&R program.

c. Processes for authorizing modifications and allocating resources for completing work should give adequate consideration to safety (risk) and the need for meeting regulatory requirements. The authorization and allocation processes should provide for a manageable maintenance backlog and prevent the need for workarounds that could increase the likelihood of an initiating event or complicate accident mitigation.

d. Ensure that licensee performance goals are not in conflict with the actions needed to correct performance issues and are aligned throughout the organization. To complete this requirement, a review should be performed of the corporate, site, and organizational strategic plans, and any other associated documents.

e. Perform a limited review of the licensee's program for the resolution of employee concerns. Focus on those concerns and programs applicable to the SPAs that are the subject of this inspection. Determine: (1) whether weaknesses in the ECP have contributed to previously identified performance issues; (2) whether additional safety issues exist that have been identified in corrective action program; and (3) whether weaknesses in the licensee's ECP have resulted in issues associated with the maintenance of a Safety Conscious Work Environment.

f. No specific guidance provided.

g. The team's review of licensee industry information programs should be limited to those problems that might have contributed to the previously identified performance concerns. Determine whether the licensee has adequately implemented actions needed to address these issues. For example, weaknesses in licensee programs to review and assess vendor information may have contributed to equipment problems.

03.06 Degraded SPA Identification and Inspection Preparation

a. No additional guidance provided.

b. During the planning process, the team should select a system based on the plant IPE, past safety system functional inspections that have already been performed, and through a review of findings and other issues.

The team should select a number of electrical, mechanical, and instrumentation and control components for a detailed review. The majority of these components should be from the principal system, with the remainder from support systems that are necessary for successful operation of the principal system or from interfacing safety systems served by the principal system.

03.07 Reactor Safety SPA Assessment

In accordance with IMC 0308, Exhibit 2, there are four cornerstones within the Reactor Safety SPA. They are: (1) Initiating Events, (2) Mitigating Systems, (3) Barrier Integrity, and (4) Emergency Preparedness. Exhibits 3 through 8 depict the Key Attributes within these cornerstones. There are six unique Key Attributes. They are:(1) Design Control, (2) Human Performance, (3) Procedure Quality, (4) Equipment Performance, (5) Configuration Control, and (6) Emergency Response Organization (ERO) Readiness.

a. Key Attribute – Design Control

Inadequacies in the design, as-built configuration, or post- installation testing of plant modifications can cause initiating events, adversely impact the capability and reliability of mitigating systems, and degrade the margin of safety in barrier design. As plants age, their design bases may be misunderstood or forgotten such that an important design feature may be inadvertently removed or disabled as changes are made to the plant. Information from this inspection will be used to assess the licensee's ability to maintain and operate the facility in accordance with the design basis.

1. The review of the design control portion of the inspection should be performed by inspectors and or contractors with extensive nuclear plant design experience. It is also important that the inspectors performing the design review understand integrated plant operations, maintenance, testing, and quality assurance so that they are able to relate their findings to the other areas being inspected.

2. The inspectors should focus their review on the system selected in Section 02.06.b.2. Specific supplemental inspection procedures are available for certain systems (e.g., service water, electrical, etc.) and should be considered as additional guidance for evaluating their functional adequacy. Prior to evaluating the selected system, the inspectors should review design basis documents, such as calculations and analyses. The review should provide the inspectors with an understanding of the functional requirements for each system and each active component throughout the range of required operating conditions, including accident and abnormal conditions. The intent is to focus on the risk-significant aspects of design that could contribute to an increased frequency of initiating events, degradation of mitigating systems, or degradation of barrier integrity. The inspection is not intended to be a re-validation of the original system design.

3. In selecting a sample of modifications to the system for inspection, the inspectors should concentrate on those modifications with the potential to significantly alter the system's design and functional capability. The sample should include modifications involving vendor-supplied products or services where practicable, since the licensee's ability to oversee vendor supplied services is an important aspect of design control. The inspectors should consider expanding the sample of modifications if significant problems are found. This expansion should consider other similar modifications and should not be limited to the initially selected system.

4. The following guidance includes a comprehensive number of design areas. The inspectors should focus their review on previous performance issues.

   (a) Verify that the design and licensing input and output information has been properly controlled.

(b) Verify the adequacy of design calculations for the selected modifications. Consider the following when evaluating the design parameters of the following components:

(1) For valves: What permissive interlocks are involved? What differential pressures will exist when the valve strokes? Will the valve be repositioned during an event? What is the source of control and indication power? What control logic is involved? What manual actions are required to restore a degraded function? Are the valves subject to pressure locking? Do the valves fail to their safety positions? Are the valves addressed in emergency or abnormal operating procedures?

(2) For pumps: What are the flow paths during accident scenarios? Do the flow paths change? What permissive interlock and control logic applies? How is the pump controlled during accident conditions? What manual actions are required to restore a degraded function? What suction and discharge pressures are anticipated during accident conditions? What is the motive power for the pump during all conditions? Do vendor data and specifications support sustained operations at low and high flow conditions?

(3) For instrumentation and automatic controls: What plant parameters are used as inputs to the initiation and control system? Is operator intervention required in certain scenarios? Is the range and accuracy of instrumentation adequate? What is the extent of surveillance and calibrations of such instrumentation? What are the power sources during station blackout conditions?

(c) Compare the as built design with the current design basis and the licensing requirements for the selected system and consider the following:

(1) Does the modification invalidate assumptions made as part of the original design and the accident analyses, including interfaces with supporting systems? For example, are service water flow capacities sufficient with the minimum number of pumps available under accident conditions? Are voltage studies accurate and will the required motor operated valves (MOVs) and associated relays operate under end-of-life battery conditions and degraded grid voltages? Are fuses and thermal overloads properly sized? Are direct current loads within the capacity of the station batteries? Is the instrumentation adequate in range and accessibility for operations to control the system under normal and abnormal conditions? Are maintenance frequencies sufficient to maintain the equipment within the range of acceptable operating parameters such as MOV friction factors? Are test results for the system consistent with the design assumptions?

(2) Does the modification invalidate design input parameters provided to accident analyses vendors?

(3) Have modified structures surrounding safety equipment, components, or structures been evaluated for seismic 2 over 1 considerations? Have modified equipment or components within the scope of 10 CFR 50.49 been thoroughly evaluated for environmental equipment qualification such as temperature, radiation, and humidity?

(d) Verify whether the selected modifications have introduced an unreviewed safety question.

(e) For the selected system, review recent changes to maintenance procedures and operating procedures to confirm that the changes have not introduced new design parameters or changed current design parameters. Confirm that any such design changes have been approved through the licensee's design change process.

(f) Examples of potential inadvertent design changes:

(1) Changing maintenance and/or surveillance procedures to tighten the packing on the main steam non-return check valves such that they are no longer free-swinging gravity-closing valves;

(2) Changing emergency operating procedures to require that operators immediately throttle auxiliary feedwater following a reactor trip to prevent pump runout that could otherwise occur during a main steam line break.

(g) Ensure that the verification and validation of computer programs used for the design and for the monitoring of important safety features has been adequately accomplished.

(h) Verify that training programs are consistent with the current design.

(i) Verify that operator actions can be performed in the required timeframe to mitigate design basis events. Verify that any changes to operator actions resulting from system modifications have been subjected to a safety evaluation and are consistent with the Updated Final Safety Analysis (UFSAR), including the accident analyses.

(1) Was reliance on the operator actions approved by the NRC?

(2) Is there reasonable assurance that, under all anticipated circumstances (e.g., lighting, ambient temperature, radiation levels) operators can perform the actions within the times assumed in the accident analyses?

(j) Assess the ability to communicate accurate information on the status of system modifications. Plant policies on updating design related material such as the UFSAR may not support timely documentation of changes to the system. Verify that provisions are in place and being followed to assure the accurate recording of the as-designed and as-built conditions during the interim period between modification implementation and incorporation of the modification information into design basis documents.

(k) Verify that the Operations organization coordinates with the Engineering organization when determining the operability of degraded structures, systems, and components (SSCs).

(l) Verify that operations, engineering, maintenance, and affected plant support groups are involved in the evaluation and concurrence process for approving:

(1) Performance of non-routine maintenance activities

(2) Temporary modifications

(3) Field change requests

(m) Review the licensee's control of vendor-supplied services and products, including an evaluation for technical adequacy and quality assurance. The licensee's evaluation and control of vendor-supplied services and products should be multi-disciplinary in its approach, and include operations, engineering, maintenance, and any affected plant support groups.

(n) Verify that self-revealing deficiencies and those identified by the licensee's vendor control process are properly communicated to the vendor.

b. Key Attribute - Human Performance.

1. By the nature of the design of nuclear power plants and the role of plant personnel in maintenance, testing and operation; human performance is an important aspect in normal, off-normal, and emergency operations. Human performance impacts each of the ROP cornerstones and therefore should be considered across this entire inspection.

2. Review the following human performance components, as related to the previously identified human performance issues.

(a) Work Control

(1) For Operations, assess whether:

i. The turnover environment is adequate for clear communication;

ii. On coming operators are walking down panels with current operators or are performing these walkdowns independently;

iii. The turnover process is controlled by procedure and procedures are being followed;

iv. Necessary plant status information is identified, and equipment and/or operational problems are discussed in sufficient detail for the oncoming shift to understand. After turnovers, verify that operators have sufficient knowledge of plant conditions and activities in progress.

v. Review the licensee's administrative procedure for the shift supervisor's conduct and duties. Verify that shift command and control is maintained. Observe at least two different shifts, including a back shift.

(2) For on-line maintenance work windows, complex surveillances, and other tests, verify that the activities are coordinated with the control room, that shift supervision is maintaining effective control of plant operations, and the control room is implementing the compensatory measures required by the risk and/or safety evaluation. Observe pre job briefings and communications

between Operations and other organizations to verify that the risk to plant safety is considered.

(3) Review a number of scheduled and non-scheduled maintenance activities. Determine if control room operators are aware of activities that could impact plant operations, and the priorities in resolving plant issues and equipment problems. Verify that control room personnel are aware of ongoing activities, such as maintenance, surveillance, and testing activities; plant equipment that has been removed from service; the impact of these activities on plant operations; and are implementing necessary required and compensatory actions.

(4) Perform a tour of the plant and note indications of operator work arounds or conditions that might require work arounds including:

i. Unapproved job aids or markings;

ii. Equipment that is not functioning as designed;

iii. The potential for adverse environmental conditions, such as insulation removed from high energy lines; open doors that are required to be closed for area isolation during a high energy line break in an adjacent area; and open doors that may render blowout panels and back draft dampers inoperable.

(5) Review a sample of written logs and shift status reports or updates to verify that they:

i. Provide sufficient detail to gain a full understanding of operationally significant issues, including abnormal occurrences or test results and any compensatory measures implemented;

ii. Describe changes in plant or equipment status.

(6) Review human-system interfaces including work area design and environmental conditions.

i. Using the guidance contained in IP 71841, “Human Performance,” perform a review of identified problem areas.

ii. If problem areas are identified:

(i) Walk down several control panels to evaluate the size, shape, location, and function or content of displays, controls, and alarms;

(ii) Evaluate work areas for the accessibility of equipment, equipment layout, and emergency equipment location, including the location of remote panels.

iii. Evaluate the impact of environmental conditions on human performance.

(7) Assess whether communications between departments and licensee management provides information needed for continued safe plant operation. The assessment should consider:

i. The responsiveness and timeliness to requests for assistance and problem resolution;

ii. Whether other departments are aware of the extent and significance of deficiencies that cut across organizational boundaries.

(b) Decision-making - For identified areas of human performance problems, assess whether the following decision-making practices support human performance while observing control room and local operations and other work activities:

(1) The roles and authorities of personnel are clearly defined and understood.

(2) Operational decisions and their bases are communicated.

(3) Interdisciplinary inputs and reviews of safety-significant or risk-significant decisions are sought out.

(4) Decision-making is systematic when personnel are faced with uncertain or unexpected plant conditions.

(5) Conservative assumptions are used, and possible unintended consequences are considered.

(c) Work Practices - Assess whether personnel work practices support human performance.

(1) Observe operators perform evolutions, tests, and respond to annunciators, if possible. Evaluate whether the evolution was performed in accordance with approved directives and temporary orders, if applicable.

(2) Observe routine activities of licensed and non-licensed personnel.

i. Verify that procedural requirements are being met and that procedures are implemented using the correct level of use (i.e., continuous use, reference use, etc.).

ii. Determine whether deficiencies are resolved using the corrective action program rather than through implementing workarounds.

iii. If possible, during evolutions, tests, and responses to annunciators, determine whether operator actions or compensatory measures were required due to degraded equipment or plant conditions, resulting in an operator workaround.

iv. Determine whether human error prevention techniques, such as conducting pre-job briefings, self- and peer-checking, and proper documentation of activities, are used commensurate with the risk of the task, such that work activities are performed safely.

v. Determine whether supervisory and management oversight of work activities, including contractors, is effective.

vi. Determine whether personnel do not proceed in the face of uncertainty or unexpected circumstances.

vii. Determine whether personnel are knowledgeable of the status of SSCs and equipment performance and understand the impact of ongoing work activities.

(3) Assess the quality of communications by observing whether:

i. Communications are consistent with licensee procedures during the conduct of operations, maintenance and testing activities;

ii. Instructions or information disseminated using the plant's phone and paging systems are clearly and concisely communicated;

iii. Personnel inform the appropriate level of management of any abnormal conditions or significant changes in plant equipment and systems.

(4) Determine if Technical Specification and/or procedure prerequisites are satisfied before procedures are implemented.

(5) Assess whether operators are attentive and are active in assessing plant conditions that may indicate a safety concern.

(d) Resources - Assess whether personnel, equipment, procedures, and other resources are available and adequate to assure nuclear safety.

(1) For identified areas of human performance problems, verify that training and personnel qualifications are adequate and appropriate for the level of work being performed.

i. If possible, observe classroom training and work in progress using the checklists of NUREG 1220, Training Review Criteria and Procedures, Revision.1.

ii. Using the guidance in IP 41500, "Training and Qualification Effectiveness," perform a limited review of training problem areas. If necessary, interview trainees, supervisors, and instructors using this guidance.

(2) In instances where previous performance issues were related to the use of excess overtime perform the following reviews.

i. Review the licensee's process for controlling overtime.

ii. Interview personnel identified as having worked overtime to determine how management ensures that personnel are not assigned to safety related duties while in a fatigued condition.

iii. Interview personnel involved in working hours in excess of those listed in the plant's Technical Specifications (with or without approval) to determine whether overtime is routine.

iv. Interview personnel involved in working hours in excess of those listed in the plant's Technical Specifications to determine whether they are willing to report whether they or others may be fatigued.

v. Refer to IP 93002, "Managing Fatigue" for guidance on the requirements of 10 CFR 26, Subpart I – Managing Fatigue. Assess the need for performing all or part of this procedure based on previous performance issues related to fatigue management.

(3) If applicable, review the control room disabled annunciator logs. For selected safety-significant annunciators, question the operators as to why annunciators are in an alarmed condition, what operator response was required by the procedures and if taken, if continuously lit annunciators prevent annunciation of new alarm conditions, and why and how annunciators are removed from service. For control room and local annunciators that cause operator distractions, determine if a controlled process for their removal is in place that includes an assessment of operational impact, compensatory actions, authorization, and corrective actions for restoration. Also, review the alarm summary printout to determine if any significant alarms occurred that were not documented in the control room logs, and whether the operators were aware of and had taken appropriate action. The review of the alarm summary printout may lead to important operator performance indication during and after a transient.

(4) Review work packages to verify that the documentation is complete, can be understood, and is accurate.

(5) If applicable, review inadequate equipment labeling.

(6) If applicable, review inadequate maintenance, surveillance, or operating procedures.

3. The guidance for observed performance-drills found in IP 82001.01, "ERO Performance Drills," and IP 82001.02, "ERO Performance Drills Dose Assessment," may be used to construct drill scenarios and evaluate performance.

(a) Evaluate performance drills with a sample of off-duty shift crews, including the Shift Supervisor and appropriate support personnel. During the drill, evaluate the organization's capability to: (1) classify hypothetical conditions, (2) notify local authorities, (3) perform dose calculations, and (4) make appropriate protective action recommendations. This scope allows the assessment of licensee performance in all the risk significant planning standards, which are outlined in IP 71114, "Reactor Safety – Emergency Preparedness". The IP 95003 inspection report should document licensee capability accordingly. The distinction between low significance missteps and the capability to implement the Emergency Plan to protect public health and safety should be clearly delineated.

(b) A small sample of significant changes to the licensee's emergency operating procedures, abnormal operating procedures, emergency response procedures, and equipment can be inspected and discussed with licensee personnel to determine whether they are aware of the changes, understand them, and have received appropriate training.

(c) It should be noted that there is no intent to inspect the licensee's ability to critique the performance drills. This IP 95003 inspection is performed to verify the licensee's ability to implement the Emergency Plan, not verify the ability to critique drills. As such, poor performance should be documented as observations under "Scope" in the EP section of the IP 95003 inspection report. Corrective action program identification numbers may be included in the report to facilitate verification of corrective actions during any future inspections.

c. Key Attribute - Procedure Quality

Inadequate procedures can cause initiating events by directing or inducing plant personnel to take inappropriate actions. Adequate procedures also assure proper functioning of mitigating systems during operation, maintenance, and testing. Emergency and abnormal operating procedures are essential for mitigating system performance and assuring appropriate actions will be taken to preserve reactor coolant system (RCS) and containment integrity. If procedure deficiencies exist, they should be identified as causes of problems in other Key Attributes. To determine the extent to which procedure deficiencies exist, consider the following:

1. Evaluate to what extent procedure quality has contributed to previously identified performance issues. Select a sample of procedures in which procedure issues have been documented in LERs, NRC inspection reports, or licensee assessments and audits. Focus on the technical adequacy of the procedures using the following guidance. Evaluate the licensee's actions to address the procedure inadequacies. Review the licensee's list of procedure changes backlog, to include a sample of different procedures from various organizations to ensure the changes are appropriately scheduled and prioritized in accordance with site procedures and if any of the changes could represent a condition adverse to quality, those procedure changes are appropriately documented in the corrective action program.

2. Development and review of procedures.

(a) Assess the technical adequacy of the procedures reviewed and determine if the procedural steps will achieve required system performance for all operational conditions. Also, determine if the system is operated in accordance with the system design.

(b) Determine whether the procedures will accomplish the activity within design characteristics and regulatory requirements. The review may include Technical Specification limiting conditions for operation, UFSAR descriptions, vendor manuals, design information, piping and instrumentation drawings (P&IDs), and instrumentation and electrical wiring and control diagrams.

(c) Review maintenance procedures for technical adequacy. Determine if the procedures are sufficient to perform the maintenance task and provide for the identification and evaluation of equipment and work deficiencies. Verify the use

of quality verification hold points for independent verification of important attributes. Compare the procedures with vendor manuals to verify that the procedures satisfy vendor requirements. Verify that vendor manuals are complete and up to date. Documents such as vendor manuals, equipment operating and maintenance instructions, or approved drawings may by reference be part of a procedure. If these documents are used, they require the same level of review and approval as the procedure that references it.

(d) If the technical adequacy of procedures is a concern, perform the following:

(1) Review a sufficient number of procedures to provide assurance that the procedures, including checklists and related forms, in the plant working files are current.

(2) Verify that personnel have the ability to reference an up to date and accurate copy of documents. This is necessary because the controlled drawings may not be revised, unless changes due to modifications are extensive. As an interim measure, some utilities have marked up a controlled set of control room documents to identify the design changes. In these situations, verify that the revision of a controlled document incorporating the marked up changes is performed in a timely manner.

(3) Procedure changes should be in accordance with licensee processes and regulatory requirements. Verify the adequacy of all procedure changes which within the last year that were required as a result of a license change or a revision to a Technical Specification.

(4) Verify procedure changes are in conformance to 10 CFR 50.59. This only applies to procedure revisions that are referenced in the UFSAR, which is typically a small portion of the procedures in use at the facility. General guidance and contrasting examples relating to the procedure changes which can be made by the licensee are described in IMC 0335, “Changes, Tests, and Experiments.”

(5) Determine if skilled craft, engineering, and technical support personnel contribute to the development, review, and approval of procedures. Determine whether special or complex procedures are tested through a “dry run” and discussed prior to use.

(6) Determine whether human factor principles, such as formatting and writing style, are incorporated into procedures to make them easier to use. Standards for formatting and writing style can usually be found in the licensee's procedure writer's guide. Ease of use should be determined by evaluating the degree to which procedures follow the guidance outlined in the writer's guide.

(7) When a writer's guide is not available or if the writer's guide is in question, a procedure’s ease of use can be assessed by evaluating the elements of writing style, format, and organization described in IP 42700, “Plant Procedures.”

(e) Verify temporary procedures were properly approved and do not conflict with Technical Specifications requirements. Review a sample of temporary procedures and temporary procedure changes issued during the past year to determine whether the review and approval requirements of the Technical Specifications were followed. Determine if the licensee has established limitations on how long a temporary procedure or a temporary procedure change can be in effect and compare this with observed practices. Verify that unapproved “procedures” are not instituted by night orders, work orders, etc.

(f) Review the licensee’s process for incorporating temporary changes into emergency procedures, abnormal operating procedures, and other significant procedures. The process should not be so burdensome that it precludes proper and timely operator action during abnormal plant conditions.

(g) IP 42001, "Emergency Operating Procedures," and the NUREGs referenced in it provide additional guidance for reviewing, developing, implementing, revising, and maintaining emergency operating procedures. The team leader should consider adding an emergency preparedness specialist inspector to the team if a detailed review of EPIPs is to be conducted.

(h) IP 82001.05, “Procedure Quality,” contains guidance for the inspection of EPIPs.

3. No specific guidance provided.

d. Key Attribute - Equipment Performance.

Equipment failure or degradation can cause an initiating event during power operation and a loss of decay heat removal during a plant shutdown. To limit challenges to safety functions due to equipment problems, licensees should have established programs to achieve a high degree of availability and reliability of equipment that can cause initiating events. The availability and reliability of equipment is also critical to mitigating the impact of initiating events on plant safety. Strong preventive and corrective maintenance programs are an integral part of assuring equipment availability and reliability. To assess this Key Attribute, consider the following:

1. Corrective Actions

(a) Based on implementation of the Maintenance Rule, 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants", evaluate the maintenance area by focusing on performance issues that resulted from poor maintenance practices. Identify maintenance related performance issues through the review of non-conformance reports, machinery history results, plant tours, the observation of maintenance work activities, LER reviews, and NRC and licensee assessments. Risk-significant SSCs identified with performance issues should receive the highest priority. After identifying a performance issue, determine whether the cause was maintenance related. The inspectors should also determine if the licensee appropriately implemented the Maintenance Rule to correct the performance issue and whether the licensee is maintaining an appropriate balance between SSC availability and reliability.

(b) Examples of maintenance program issues include a relatively large maintenance work request backlog, related maintenance work not being accomplished in

accordance with administrative and procedural controls, and the failure to identify required maintenance-related procedure changes.

2. Programs and Processes for Testing

   (a) Determine whether effective methods exist for the evaluation of surveillance testing and calibration data. This includes procedures for the reporting of deficiencies, failures, and malfunctions identified during the testing and calibration or inspection which require the verification of operability.

   (b) Review a sample of post-maintenance testing results to ensure that the testing is adequate to ensure that the equipment has been returned to an operable configuration.

   (c) Verify that surveillance testing procedure acceptance criteria supports continued operability.

   (d) Verify that the licensee is effectively calibrating instruments that are important to safety. The Technical Specifications do not specify calibration requirements for some of these instruments. Examples include boric acid tank temperature; discharge pressures for engineered safety feature pumps; safety injection accumulator level and nitrogen cover gas pressure; cooling water flow to containment coolers; and main steam isolation valve limit switches used to verify valve closure time and provide an input to the reactor protection system.

3. Operational Performance of Systems and Components.

   (a) Review the system operating procedures and the system P&IDs. If any special equipment is required to perform these procedures, determine if the equipment is available and functional. Verify that operators are knowledgeable of equipment location and operation.

   (b) Conduct interviews to determine if operators understand how the system is designed to be operated. Determine if system operation is consistent with the intended safety function.

   (c) Determine if the environmental conditions assumed in a design basis event are adequate for remote operation of equipment, such as expected room temperature, emergency lighting, steam, radiation levels, etc.

   (d) Review the maintenance program for the selected system to determine if the preventive maintenance (PM) requirements are adequate and comprehensive.

   (e) Review applicable design documents, vendor manuals, generic communications (i.e., Bulletins, Information Notices, Generic Letters, and special studies) and verify that the licensee has integrated and implemented applicable items into the maintenance program.

   (f) Identify what maintenance and modifications have been performed. Determine if the maintenance and modifications are consistent with the licensing basis.

(g) Determine if engineering inputs into maintenance activities ensure safe and reliable plant operations.

(h) Verify that methods and responsibilities have been designated for performing functional testing of SSCs following maintenance and/or prior to the SSCs being returned to service.

4. IP 82001.04, “Facilities and Equipment,” contains guidance for the inspection of EP related equipment and facilities.

5. Review records of decisions regarding actions to address long standing issues to determine whether the decisions appropriately considered safety.

6. Review records of decisions to address long-standing issues. Determine whether resource implications were considered and whether inadequate personnel, equipment, or procedures contributed to a delay in resolving the issue.

e. Key Attribute - Configuration Control.

The loss of configuration control of risk-significant systems or equipment can lead to a transient and/or compromise accident mitigation capability. Maintaining proper water chemistry in the RCS is essential to long-term nuclear fuel and the RCS pressure boundary integrity. Proper configuration control is necessary to ensure that the RCS is maintained intact and monitored for degradation. Containment integrity relies on maintaining the configuration of penetrations and safety-related systems. Maintaining the containment within its design limits ensures it will be able to withstand a design basis event. To assess this Key Attribute, consider the following:

1. Select a sample of the corrective action program and/or PIM issues related to configuration control and review the adequacy of the corrective actions implemented. Review recent operability determinations that have been completed on the selected system.

2. System Walkdown

(a) For the selected system, review operating procedures, drawings, Technical Specifications, system health reports, and consult the UFSAR sections that describe system operation. Compare the system alignments in procedures and drawings for the various system configurations with system design basis documents and the UFSAR. Determine whether these alignments are consistent with the as-built configuration.

Compare system line-up procedures with drawings to ensure that they are consistent (e.g., valve positions, installation of blank flanges and caps, etc.).

(b) Review jumper, lifted lead, and other temporary modification logs. Determine: (1) if an adequate technical review to ensure the absence of an unreviewed safety question was performed, and (2) if plant drawings were updated to reflect the change. The licensee's controls for limiting the duration of temporary modifications should also be reviewed. Assess the role of the plant, system, and design engineering groups in the temporary modification process.

(c) Determine if valves in the system flow path are in their correct position by either visual observation of the valve; by flow indication; or by stem, local or remote position indication and that they are locked or sealed, if appropriate.

(d) Verify that valves do not exhibit excessive packing or boric acid leakage, missing hand-wheels, bent stems, or other deficiencies. Ensure that local and remote position indications are functional and indicate the same values. Remote manual operating devices should also be verified to be functional.

(e) Verify that pump seals do not exhibit signs of excessive leakage.

(f) Verify that cooling water is aligned to bearings and seals, that oil bubblers and bearings do not exhibit signs of excessive leakage, and that the oil bubblers are set correctly. For oil bubblers, installation is very important and critical for correct operation, see OpE information at https://www.nrc.gov/docs/ML0130/ML013020195.pdf.

(g) Verify that power is available and correctly aligned, functional, and available for components that must activate on receipt of an initiation signal.

(h) Verify that major and support system components are correctly labeled, lubricated, cooled, and ventilated.

(i) Review system mechanical joints leakage requirements and verify that known leakage is properly addressed and that observed leaks are accounted for.

(j) Determine if selected instrumentation, essential to system actuation, isolation, and performance, is correctly installed and functioning, correctly calibrated, and displaying indication consistent with expected values. Determine whether instrument elevations are consistent with design documents.

(k) Identify whether actual or potential adverse environmental conditions exist, and the adequacy of any compensatory measures.

(l) Determine whether installed system components are consistent with their UFSAR descriptions. Determine whether a 10 CFR 50.59 safety evaluation was performed for any items that differ from their UFSAR description.

(m) Identify additional equipment conditions and items that might degrade plant performance by determining whether:

(1) Freeze protection, such as insulation, heaters, heat tracing, temperature monitoring, and other equipment, is installed and operational.

(2) Hangers and supports are in their proper positions, aligned correctly, and intact.

(3) No unauthorized ignition sources or flammable materials are present in the vicinity of the system being inspected.

(4) Cleanliness is being maintained.

(5) Temporary storage of material and equipment is in accordance with the licensee’s seismic control procedures and does not interfere with equipment operations or operator actions.

3. Maintenance Work Control

(a) Review the licensee's backlog of corrective and preventive maintenance, including any trends, particularly related to equipment of high safety significance. Assess the licensee's efforts to integrate preventive and corrective maintenance to minimize equipment unavailability.

(b) Assess the licensee’s process for planning work, including the assessment of risk and the inclusion of new emergent work into the schedule. Assess the policies for scheduling maintenance and the use of risk insights. Select several work packages for safety-related equipment and determine how risk was factored into their scheduling. Assess whether the licensee evaluates possible interactions between components in service and those to be tested. Assess whether the need for planned contingencies, compensatory actions, and abort criteria were considered.

(1) What risk assessment tools are provided to the operators?

(2) What risk training has been given to the planning staff?

(3) Who authorizes work to progress?

(4) How is emergent work risk integrated into existing risk evaluations?

(c) For the selected system, review the operating performance history and compare it with the assumed out-of-service times in the IPE. Determine whether the assumptions are consistent with actual equipment performance.

(d) If warranted as a result of past performance deficiencies, select one or more safety system tag outs for inspection. Determine if the tagout is adequate for the work to be accomplished. Verify that operators are thorough in the tagging and isolation of plant equipment. Verify that tags are properly hung, and equipment has been placed in the designated position. Determine if equipment status changes and corresponding entry into or exit from Technical Specification action statements are appropriately documented.

(e) If warranted as a result of past performance deficiencies, determine if the licensee has established adequate controls to ensure the independent verification of equipment status, particularly when equipment is returned to service.

(f) Verify that maintenance activities are coordinated with control room operations and that appropriate briefings and turnovers are held.

(g) Determine if environmentally qualified equipment is identified prior to maintenance and it is returned to that status upon restoration.

(h) Assess the significance of the following: long-term (typically greater than six months) tagouts; disabled control room annunciators and instruments; control room deficiencies; operator work arounds, and other equipment deficiency tracking systems.

(i) If warranted as a result of past performance deficiencies, review the licensee's process for using rapid response maintenance teams.

(j) Verify that work control procedures have been established to require special authorization for activities involving welding, open flame, or other ignition sources and take cognizance of nearby flammable material, cable trays, or critical process equipment. Ensure that work control procedures have been established to require a fire watch, with the capability for communication with the control room, if an activity is to be performed in the proximity of flammable material, cable trays, or vital process equipment. Verify that procedures address scaffold controls near safety-related, important to safety, and operating equipment.

4. Chemistry Controls - Limit reviews to primary and secondary chemistry which could degrade the RCS pressure boundary.

(a) Review records of completed chemical analyses to determine if required analyses have been performed.

(b) Review trends of recorded water quality data.

(c) Assess corrective actions taken when chemistry limits are exceeded, including the timeliness of these actions.

(d) Assess the effectiveness of measures to prevent the introduction of chemical contaminants into primary and secondary coolant water and to detect the presence of these contaminants.

(e) Review licensee evaluations of parameter trends associated with steam generator leakage.

5. Fission Product Barrier Assessment

(a) Observe a portion of the containment isolation lineup and independently verify whether valves, dampers and airlock doors are being controlled in accordance with the Technical Specifications.

Select several components and independently verify that they are in their required position. Where possible, confirm valve position indication by direct observation of the valve mechanism. For valves that isolate on a containment isolation signal verify proper breaker position and availability of the power supply. For motor and air-operated valves, verify they are not mechanically blocked, and power is available, unless it is required to be otherwise. Inspect piping and test, vent, and drain valves, as appropriate, for possible leakage paths.

(b) Assess the licensee's method of calculating the RCS leakage rate.

(c) As associated with containment temperature and pressure monitoring, review the licensee's procedures for ensuring that the containment atmosphere and/or water space meets the design basis assumptions for average temperature and pressure.

f. Key Attribute - Emergency Response Organization Readiness.

Implementation of the Emergency Response Plan is dependent on the readiness of the ERO to respond to an emergency. In this usage, "readiness" means the ability of the licensee to activate timely ERO augmentation of shift personnel as necessary to implement the emergency plan. Self-assessments of readiness during drills and activation tests are used to identify areas for improvement. Self-assessment and corrective action resolution is critical to ERO readiness. The guidance of IP 71114.03, "Emergency Response Organization Staffing and Augmentation System," is applicable and may be utilized.

03.08 Radiation Safety SPA Assessment

In accordance with IMC 0308 Exhibit 2, the Radiation Safety SPA includes two cornerstones: (1) Occupational Radiation Safety and (2) Public Radiation Safety. These cornerstones share the following three Key Attributes: (1) Programs and Processes, (2) Plant Facilities, Equipment & Instrumentation, and (3) Human Performance.

a. Occupational Radiation Safety Cornerstone

The effective implementation of the RP program and implementing procedures contribute to proper control of occupational exposures. Programmatic deficiencies, inadequate procedures, and/or improper implementation have all resulted in significant, uncontrolled occupational exposures in excess of regulatory limits, both from internal and external radiation sources. Worker radiation exposure controls are governed by both administrative and physical controls, which serve as protective barriers that prevent excessive, unintended exposures in high and very high radiation areas, and significantly contaminated and airborne areas.

1. Key Attribute – Programs and Processes for Occupational Radiation Safety

Each position within the RP organization includes a position description with clearly defined authorities and responsibilities. For example, health physics technicians (HPTs) should understand what authority exists to implement an effective RP program (e.g., stoppage of work and adherence to procedures). The HPT and craft workers should all understand these responsibilities and authorities. The inspectors should understand the RP manager's (RPM's) position in the command chain and how this affects the RPM's direct ability to address RP program issues. The RPM's responsibility and authority should be reviewed and discussed with appropriate senior licensee management.

(a) Determine if adequate HPT coverage is being provided during outages and backshift operations. Determine the extent of first-line supervision presence in the field since the absence of in-field supervision can contribute to serious mishaps and over exposures.

(b) Determine whether procedure quality has contributed to performance issues.

Review a sample of procedures in which problems have been documented in LERs, NRC inspection reports, or licensee assessments or audits. Focus on the technical adequacy and completeness of the procedures using the following guidance:

(1) Determine if the procedure steps will achieve the stated goal. Determine if the procedure is understood and used by the HPTs.

(2) Verify that the licensee has an effective system to ensure that the plant working files contain current procedures, including checklists and related forms.

(3) Verify that procedures are revised in accordance with licensee processes and regulatory requirements. Verify the adequacy of all procedure changes within the last year in a selected area of concern (e.g., RWP issuance).

(4) Through discussions with personnel, determine if HPTs and first line supervisors contribute to the development, review, and approval of procedures.

(5) Verify that temporary procedures were properly approved and do not conflict with any requirements by reviewing a sample of recent temporary procedures and revisions.

(c) Effective RP work practices includes the consideration of high and very high radiation areas and awareness of potential hazards (e.g., diving operations, removing neutron-activated items from the reactor, and other non-routine and infrequent operations). See Regulatory Guide 8.38, “Control of Access to High and Very High Radiation Areas in Nuclear Power Plants” for additional guidance. Select at least three jobs being performed in radiologically challenging areas. If possible, select jobs in locked high radiation areas with an estimated collective dose of greater that one person-rem. Additionally, focus on work in airborne radioactivity areas, with a special emphasis on areas where transuranic radionuclides may be present.

(1) Review all pertinent job requirements (RWP, work control procedures, etc.), attend pre-job briefings, and observe infield work and assess compliance with requirements.

(2) Determine if the job conditions were adequately communicated to the workers through pre-job briefings and work site postings.

(3) Verify the accuracy of required surveys and determine whether HPT job coverage satisfies RWP requirements. Verify that worker dose monitoring meets licensee and regulatory requirements. Include any requirements for extremity monitoring and multi-badging for distributed dose equivalent (DDE). At some sites, the improper use of digital alarming dosimeters has been caused by: (1) a lack of training in their proper use, (2) use in high noise areas or under protective clothing, which made the alarm inaudible, and (3) inadequate or absent procedures for their use.

(4) Attend post-job debriefings to assess any lessons learned discussion.

Determine how the licensee incorporates lessons learned into processes and procedures.

(5) Review the diving procedure and determine if it meets Regulatory Guide 8.38, Appendices A and B. Consult Information Notice 97-68, “Loss of Control of Diver in a Spent Fuel Storage Pool” for guidance.

(6) Transuranic elements can be a potential airborne problem at plants with previous fuel performance problems (i.e., leaking fuel). Consult Information Notice 97-36, “Unplanned Intakes by Worker of Transuranic Airborne Radioactive Materials and External Exposure Due to Inadequate Control of Work”. Note that while a plant with a history of leaking fuel may not have observed evidence of transuranic contamination for years based on loose-contamination smears or routine air samples, alpha contamination on the interior surfaces of components that carry primary system fluids may still exist. When these interior surfaces are disturbed by mechanical actions, high levels of transuranic airborne activity have resulted in significant, unplanned worker intakes.

(7) Review each planned special exposure to determine whether it meets the requirements of 10 CFR 20.1206. Review Regulatory Guide 8.35, "Planned Special Exposures," for additional guidance

(8) Review the records of exposures to declared pregnant women and determine whether the measured dose satisfies the requirements of 10 CFR 20.1208. Consult Regulatory Guide 8.36, "Radiation Dose to the Embryo/Fetus," for additional guidance.

(d) Review the extent to which the licensee has assessed and/or implemented methods for controlling occupational radiation dose by managing radiation sources and fields. Techniques for reducing exposure are included in Electric Power Research Institute (EPRI) report TR-107991, "Radiation Field Control Manual - 1997 Revision," October 1997.

(1) PWRs: Methods that can provide an immediate impact include: (a) chemical decontamination together with a modified pH primary chemistry control program and use of Zircalloy fuel grids; and (b) valve maintenance procedures to remove cobalt debris. Methods that will have a delayed impact include: (a) Zircalloy fuel grids without decontamination; (b) electro-polishing of replacement steam generators, (c) cobalt replacement guidelines and NOREM valves, and (d) use of low-cobalt Inconel 690 tubing for replacement steam generators.

(2) BWRs: Methods that can provide an immediate impact include (a) chemical decontamination together with the replacement of control blade pins and rollers and zinc injection; (b) installation of cobalt-free feedwater control valves; and (c) valve maintenance procedures to remove cobalt debris. Methods available now that will have a delayed impact include (a) pin and roller replacements and zinc injection without decontamination, (b) electro-polishing and/or pre-conditioning of replacement components, and (c) cobalt replacement guidelines.

(3) The techniques above involve cobalt source reduction, preconditioning of out-of-core surfaces, control of crud transport (water chemistry control), and chemical decontamination.

(e) Review work tasks to verify that pre- and post-job reviews are being conducted using a graded approach to managing dose below regulatory limits. Determine whether the pre-job reviews adequately address the work to be performed, and whether lessons learned from post-job reviews are incorporated into future work and/or training. Ensure that the radiological significance of work performed under the direction of licensee vendors and/or contractors is adequately reviewed before the work is started. Review the licensee's method for applying a graded approach to managing dose during work planning commensurate with the potential for personnel exposures to exceed regulatory limits.

(f) Review the licensee's organizational structure for responsibilities related to managing dose. Determine whether a clear delineation of authority and responsibility exists, including dedicated staff to implement the program on a daily basis and during outages. Training that extends beyond the scope of General Employee Training for personnel such as radiation workers is desirable for radiation protection technicians, and special maintenance teams. Professional development training should be available for personnel responsible for these activities and related staff.

2. Key Attribute - Plant Facilities/Equipment & Instrumentation – Occupational Radiation Safety

To properly conduct adequate radiation monitoring and surveillance activities and to protect workers, the facility is required to maintain fixed and portable radiation survey equipment for airborne and external hazards, respiratory protection, communication equipment, temporary ventilation and shielding, and anti-contamination clothing. Routine calibration and maintenance of this equipment ensures its continued operability and functionality. If problems are identified during the inspection preparation or during the conduct of this inspection, the team should perform the following inspection activities:

(a) No specific guidance

(b) Observe the full calibration of beta/gamma survey instruments, as well as the daily source and response checks, and prior-to-use functional checks for these instruments.

(c) Verify that the HPTs and maintenance technicians are familiar with the procedures governing the selected activity. Determine whether HPTs are following the procedure. Discuss observed procedure deviations. Assess the facility's use of "skill of the craft" for activities performed without a written procedure.

(d) Ensure that the facility has an adequate supply of materials necessary to support current operations and emergent work and/or special outages. This includes anti-contamination clothing, respiratory protection equipment, temporary shielding, temporary portable ventilation equipment, personal cooling devices, and other similar equipment.

(e) Determine if the facility has adequate areas for personal and equipment decontamination, equipment maintenance, equipment calibration, and spare parts storage.

(f) Discuss the budgetary process with the RPM and first line supervisors and assess whether the non-approval of budget requests are appropriate. Focus on those budget items that had been approved by the RPM but not supported by senior licensee management. Identify the reasons for budget non-approvals for major proposed items and assess the contribution to identified program deficiencies.

(g) Identify plant areas that have become unusable as a result of an operational occurrence and licensee actions to control and recover such areas. See SECY-89-326 for additional guidance.

(h) Determine whether plant improvement efforts considered radiation safety. Assess whether the positive impact of the improvements were considered and whether events which adversely impacted radiation safety occurred after a decision was made to not approve a related radiation safety recommendation.

3. Key Attribute - Human Performance for Occupational Radiation Safety

Worker performance can impact work activities in radiological areas. Human performance is impacted by many factors, including qualification and training. Qualification and training requirements for facility personnel are generally governed by an ANSI standard committed to in the plant Technical Specifications. 10 CFR 50.120 requires that HPTs are task qualified for their assigned duties.

(a) Using data from the licensee's corrective action program, LERs, audits, and self-assessment, determine if human performance issues have contributed to occupational radiation safety performance deficiencies. Evaluate the effectiveness of corrective actions by reviewing the corresponding commitments. Determine if the problems were reviewed by management and prioritized according to their safety significance. Evaluate whether planned and implemented corrective actions were adequate to address the identified problems and were implemented in a timely manner.

(b) Review the following components of human performance, as related to previously identified human performance issues.

(1) Work Control and Human Interface – For work control related issues such as the coordination and communication of work activities including pre-job briefings, effective communications, and shift turnover practices; or for human-system interface issues in the areas of, work area design, work environment conditions, or work-arounds, consider the following:

i. Determine if shift turnover time is sufficient, and whether plant status and work conditions are adequately discussed. Determine how work requiring RP oversight is tracked from shift to shift and identify the applicable governance documents. Determine whether these tracking tools were reliably and consistently used. Observe an HPT shift turnover and identify any weaknesses or deficiencies in communication.

ii. If problems are identified in these areas, the inspectors should:

(i) Assess work areas for accessibility, equipment layout, emergency equipment location, power supplies for infield sampling, etc.

(ii) Evaluate the impact and means to compensate for temperature extremes, and other industrial hazards that could impact radiation safety performance.

(iii) Observe HPT interactions with workers during the development of RWPs, particularly for high radiation area work.

(iv) Determine how and when HPTs inform management of abnormal conditions or significant changes in the physical work environment.

(v) Evaluate the use of Engineering and Radiation Protection staff to support high dose work.

iii. Assess the quality of communications by observing HPTs interact with workers during the development of RWPs, particularly for high radiation work.

(2) Decision-making - If problem areas and issues were identified in the decision-making area, then conduct observations of planning activities to determine whether decision-making includes contingency planning and use of conservative assumptions, and decisions are communicated to affected personnel. For identified areas of human performance problems, verify that the following decision-making practices support human performance while observing control room and local operations and other work activities:

i. The roles and authorities of personnel are clearly defined and understood.

ii. Operational decisions and their bases are communicated.

iii. Interdisciplinary inputs and reviews of safety-significant or risk-significant decisions are sought.

iv. Decision-making is systematic when personnel are faced with uncertain or unexpected plant conditions.

v. Conservative assumptions are used and potential unintended consequences are considered.

(3) Work Practices - If work practices, such as peer- and self-checking, procedural use and adherence, human error prevention techniques, or management and supervisory oversight, were identified as problem areas, then conduct in-field observations of work in radiological areas, and focus on HPT and worker performance relative to required RP work practices.

i. Assess the quality of communications by determining how and when HPTs inform management on an abnormal condition or significant change in the work environment.

ii. Evaluate the use of Engineering and Radiation Protection staff support during high dose work.

iii. Verify that Technical Specifications and/or procedure prerequisites are satisfied before procedures are executed.

iv. Assess whether radiation protection technicians stop work due to radiological conditions and considerations when appropriate.

(4) Resources - If resources availability issues such as: 1) insufficient staffing and/or excessive overtime, or 2) inadequate and/or insufficient radiation protection tools and equipment were identified, then consider the following:

i. Review the licensee's overtime approval process to determine how management ensures that workers are not assigned safety-related duties while in a fatigued condition. Interview workers to determine if work hours exceed Technical Specifications limits, whether overtime was properly approved, and whether the approval of overtime resulted in fatigue. Consult Health Physics Position #'s 024,173, and 253 for additional information.

ii. Interview HPTs and other RP staff who worked hours greater than Technical Specification limits and determine whether they feel free to report if they or others are fatigued.

iii. Refer to IP 93002, "Managing Fatigue," for guidance on the requirements of 10 CFR 26, Subpart I – Managing Fatigue. Assess the need for performing all or part of this procedure based on previous performance issues related to fatigue management.

(c) Experience, qualification, and training of RP staff – Review the applicable experience, qualification and training of the licensee's RP staff.

(1) Review the licensee's program to provide training and periodic refresher training to plant and contractor personnel on assigned duties and on safety significant changes to programs and procedures. Determine whether this training includes lessons learned from recent industry events and NRC communications (i.e., Information Notices, Generic Letters, Administrative Letters, etc.) and the proper use of human performance tools. Through discussions with selected personnel, review of training lesson plans, and completed training records, determine if the requirements of 10 CFR 19.12 are met. If possible, observe portions of the general employee training, focusing on the practical aspects of the training.

(2) Review RP worker qualification and training of selected members of other facility work units, including contractor employees.

(3) Interview RP personnel, including first line supervisors, RP staff, and the RP manager. Assess their knowledge of the RP program and implementing procedures.

(4) Select a random sample of RP staff and contractors. Through a review of documentation, direct observation, and interviews, determine if training and qualification requirements for their assigned duties and positions are met. Technical Specifications normally include commitment to an industry standard on personnel selection, training, and qualification.

(5) For a sample of contractor HPTs, determine whether these individuals are qualified to perform their assigned outage activities in accordance with 10 CFR 50.120. The following general guidance exists concerning 10 CFR 50.120:

i. The only RP personnel affected by the 10 CFR 50.120 are "radiological protection technicians" (i.e., HPTs) who are employees of the power plant. Supervisory, managerial, and other technical staff are not included. Contractor HPTs are not included unless they are assigned regular positions performing independently within the licensee's organization. If short-term contractor HPTs (e.g., outage workers) are assigned to work independently, they must be qualified to perform their assigned tasks.

ii. 10 CFR 50.120 only requires job task qualification, not qualification based on pre-selection criteria. The completion of a training program required by 10 CFR 50.120 does not obviate the need to comply with other training or qualification requirements imposed by other regulations and/or license conditions.

iii. By direct observation and discussion with HPTs providing job coverage, determine if they have knowledge of the job activities and radiological conditions to provide adequate coverage. During discussions with HPTs, focus on ensuring adequate knowledge of radiological hazards associated with plant systems; particularly neutron-activated components such as traversing in-core probes (TIPs), in-core neutron detectors, and cabling, as discussed in Information Notice No. 88-63 and its Supplements 1 and 2, "High Radiation Hazards from Irradiated In-core Detectors and Cables". Interviews using table-top scenarios in small groups of RP staff may be effective for assessing HPT knowledge and capabilities.

iv. Assess the licensee's methods used to provide training of permanent and contractor personnel on safety- significant changes in procedures and recent events. Emphasize training to the work force required during an outage. Discuss any observations with plant management and the RPM.

(6) Review training records and lesson plans for a sample of station and contractor workers to determine if the requirements of 10 CFR 19.12 are satisfied. If possible, observe portions of general employee training with a focus on “hands-on” training aspects.

(d) Interviews should focus on identified program deficiencies, root causes, and action plans for improving performance. Discuss how improvements will be implemented, including required programmatic changes and how these changes will be accomplished.

b. Public Radiation Safety Cornerstone.

1. Key Attribute - Plant Facilities / Equipment and Instrumentation for Public Radiation Safety

   The improper installation, modification, maintenance, or calibration of radioactive effluent monitoring equipment and associated radiochemistry laboratory equipment and meteorological systems equipment can adversely affect licensee performance in achieving and demonstrating compliance with regulatory limits. For transportation activities, shipping packages not prepared in accordance with their applicable design requirements increase the potential for unexpected exposure or loss of radioactive material, which could result in uncontrolled and unnecessary exposure to members of the public. To prevent the inadvertent release of licensed radioactive material from the licensee's control, the use of sensitive radiation survey equipment that is properly installed and calibrated is necessary.

2. Key Attribute - Programs and Processes for Public Radiation Safety

   Procedures must be technically adequate and adequately implemented to ensure the proper processing, control, and discharge of radioactive effluents into the environment. For transportation activities, procedural guidance is necessary for the proper evaluation of radioactive waste to determine the quantities and types of radioactive material present for the selection and preparation of shipping packages. Detailed procedures are required to conduct radiation surveys of the packaged radioactive waste to ensure that radiation levels are within regulatory limits. The performance of radiation surveys on equipment and material to be released from the licensee's facility requires appropriate policy and technical procedural guidance for handling and processing a wide variety of potentially contaminated materials.

   (a) No specific guidance provided.

   (b) Review of procedures

      (1) When reviewing the licensee's procedures, assess the technical adequacy of the procedures and determine if the procedural steps will achieve the required result.

      (2) Determine whether the procedures are consistent with the Technical Specifications, program documents, and regulatory requirements. This review may include Technical Specifications, program documents, UFSAR descriptions, vendor manuals, design information, and instrumentation diagrams.

      (3) If applicable, review maintenance procedures associated with the instrumentation and equipment being inspected for technical adequacy. Determine if the procedures are adequate to perform the maintenance task and provide for the identification and evaluation of equipment and work deficiencies. If applicable, verify the use of quality verification hold points for independent verification of important attributes. Compare the procedure with the vendor manual to verify that the procedure satisfies vendor requirements. Verify that vendor manuals are complete and up to date. Documents, such as vendor manuals, equipment operating and maintenance instructions, or

approved drawings with acceptance criteria, may by reference be part of a procedure. In this case, the documents (or applicable portions) require the same level of review and approval as the procedure that references it.

(4) Through discussions with personnel and a review of approved procedures, determine if radiation protection and technical support personnel contribute to the development, review, and approval of procedures. Determine if unique and/or complex high radiation work procedures are reviewed and approved by personnel responsible for work performance.

(5) Incorporating accepted human factors principles on format and writing style into procedures increases the likelihood that the procedures will be easier to use and follow. Standards for format and writing style can usually be found in the licensee's writer's guide. Assess the ease of use of these procedures by evaluating the degree to which procedures adherer to the guidance outlined in the writer's guide.

(6) When a writer's guide is not available or if the writer's guide is in question, a procedure's ease of use can be assessed by evaluating the elements of writing style, format, and organization described in IP 42700, "Plant Procedures."

(7) Verify temporary procedures were properly approved and did not conflict with Technical Specification requirements. Review a sample of temporary procedure changes issued during the last year to determine whether the approval and subsequent review requirements of the Technical Specifications were followed. Determine whether the licensee has procedural limitations on how long a temporary procedure or temporary procedure change can be in effect and compare this with observed practices.

(c) If the technical adequacy of procedures is a concern, review the following.

(1) Review a sufficient number of procedures to provide assurance that the procedures, including checklists and related forms in the plant working files, are current.

(2) Verify that personnel have the ability to reference an up-to-date and accurate copy of documents. This is necessary because the controlled drawings may not be revised, unless changes due to modifications are extensive. As an interim measure, some utilities have marked-up a controlled set of documents to identify the design changes. In such cases, verify that revisions to the controlled documents incorporating the marked-up changes are performed in a timely manner following the modification approval and installation.

(3) Verify the adequacy of all procedure changes within the last year resulting from recent license changes or revisions to a Technical Specification or program document. Verify that these procedure changes are in conformance with 10 CFR 50.59. This item applies only to changes to procedures that are described or summarized in the UFSAR, which is typically only a small portion of the procedures in use at the facility. General guidance and contrasting examples relating to the procedure changes which can be made

by the licensee are described in IMC 0335, “Changes, Tests, and Experiments.”

(d) Review a sample of records produced from implementation of the procedures. Review the record file system and determine if the records are adequately filed and controlled in accordance with the procedure. Verify that the records are legible and include required signatures.

3. Key Attribute - Human Performance for Public Radiation Safety

Human performance can directly affect radioactive waste processing, radioactive effluent processing, and transportation programs. It is important to ensure that plant workers are adequately trained and qualified to perform their job functions. Periodic retraining is also needed to ensure that workers maintain their qualifications and are updated with new information and requirements.

(a) Using data from the licensee’s corrective action program, LERs, audits, and self-assessments determine if human performance issues have contributed to performance issues. Evaluate the overall effectiveness of human performance-related corrective actions by reviewing the licensee’s corrective action commitments. Determine if the problems were reviewed by an appropriate level of management and prioritized according to their safety significance. Evaluate whether the corrective actions were technically correct and implemented in a timely manner.

(b) Review the following components of human performance, as they relate to the previously identified human performance issues.

(1) Work Control – Determine whether assignments and technical information from management is effectively communicated to the workers.

(2) Decision-making – For identified areas of human performance problems and while observing control room and local operations and other work activities, verify that the following decision-making practices support human performance:

i. The roles and authorities of personnel are clearly defined and understood.

ii. Technical Specifications and/or procedure prerequisites are satisfied before procedures are executed.

iii. Operational decisions and their bases are communicated.

iv. Interdisciplinary inputs and reviews of safety-significant or risk-significant decisions are sought out.

v. Decision-making is systematic when personnel are faced with uncertain or unexpected plant conditions.

vi. Conservative assumptions are used, and possible unintended consequences are considered.

(3) Work Practices - Assess this area while observing the performance of procedures.

(4) Resources

i. Review the licensee's program to provide training and periodic refresher training to plant and contractor personnel on assigned duties and on safety significant changes to programs and procedures. Determine whether this training includes lessons learned from recent industry events and NRC communications (i.e., Information Notices, Generic Letters, Administrative Letters, etc.) and the proper use of human performance tools. Through discussions with selected personnel, review of training lesson plans, and completed training records, determine if the requirements of 10 CFR 19.12 are met. If possible, observe portions of the general employee training with a focus on the practical aspects of the training.

ii. Review the licensee's overtime program and process to determine how management ensures that workers are not assigned safety-related duties while in a fatigued condition. Interview workers to determine if they worked hours greater than specified in the Technical Specifications to evaluate any repetitive nature that can lead to a performance degradation.

iii. Refer to IP 93002, "Managing Fatigue," for guidance on the requirements of 10 CFR 26, Subpart I – Managing Fatigue. Assess the need for performing all or part of this procedure based on previous performance issues related to fatigue management.

(c) No specific guidance provided.

(d) Interview several plant and contractor personnel (i.e., technicians, engineers, health physicists, and supervisors) associated with the program to assess their knowledge of the program and procedures and to determine their qualifications for their assigned position and duties. Evaluate training, experience, and qualifications through job documentation (usually specified in a licensee document), direct observation, and discussion with the individual.

03.09 Safeguards SPA Assessment

In accordance with IMC 0308 Exhibit 11, there is one cornerstone in the Safeguards SPA. That cornerstone is Security. There are five Key Attributes in this cornerstone: (1) Physical Protection, (2) Access Authorization, (3) Access Control, (4) Cybersecurity, and (5) Response to Contingency Events.

a. Key Attribute - Physical Protection

1. Using IP 71130.16, "Security Performance," Attachment: 3, "Equipment Testing and Maintenance," verify and assess whether the licensee's security equipment testing and maintenance program has been appropriately developed and effectively implemented in accordance with the NRC-approved security plan, regulatory requirements, and any other applicable Commission requirements.

2. Using IP 71130.16, “Security Performance,” Attachment: 4, “Security Training,” verify the licensee’s nuclear security training program has been appropriately developed and effectively implemented are in accordance with the NRC-approved training and qualification (T&Q) plan, regulatory requirements, and any other applicable Commission requirement.

b. Key Attribute - Access Authorization

1. Using IP 71130.16, “Security Performance,” Attachment: 7, “Access Authorization and Fitness for Duty,” verify the licensee’s Access Authorization and Fitness-for-Duty programs have been appropriately developed and effectively implemented in accordance with the NRC-approved security plan, regulatory requirements, and any other applicable Commission requirement.

c. Key Attribute - Access Control

1. Using IP 71130.16, “Security Performance,” Attachment: 1, “Access Control,” verify the licensee’s Access Control program for personnel, materials, and vehicles has been appropriately developed and effectively implemented in accordance with the NRC-approved security plan, regulatory requirements, and any other applicable Commission requirement.

d. Key Attribute - Cybersecurity

1. Using IP 71130.10, “Cybersecurity,” verify the licensee’s cybersecurity plan has been appropriately developed and effectively implemented in accordance with the NRC-approved cybersecurity plan, regulatory requirements, and any other applicable Commission requirement.

e. Key Attribute - Response to Contingency Events

1. Using IP 71130.16, “Security Performance,” Attachment: 2, “Physical Protection Program,” verify that the license has developed, implemented, and is maintaining a protective strategy designed to meet the general performance objectives of 10 CFR 73.55(b)

2. Using IP 71130.16, “Security Performance,” Attachment: 6, “Power Reactor Target Sets,” verify the licensee developed, identified, and revised, as necessary, its site-specific target sets and accounted for them in the development of the protective strategy.

3. Using IP 71130.16, “Security Performance,” Attachment: 5, “Performance Evaluation Program,” verify the licensee has developed, implemented, and is maintaining a performance evaluation program designed to meet the general performance objectives of 10 CFR 73(b).

(a) Inspectors may observe a licensee conducted force-on-force exercise and perform one or more table-top drills to assess the effectiveness of the protective strategy and ascertain if it is implemented as described.

03.10 Licensee Third-Party Safety Culture Assessment Evaluation

Evaluate the licensee's third-party safety culture assessment, including the methods used to perform the assessment, sampling strategies, team qualifications, and the use of appropriate safety culture assessment methodologies and protocols. After an industry safety culture assessment methodology is found to be acceptable by the NRC, the guidance in this section will be evaluated for potential revisions to address the use of such a methodology.

The assessment method(s) used by the licensee's third-party safety culture assessment contractor should follow the professional standards and methodologies established for conducting organizational assessments. For example, if surveys are used, general survey techniques for ensuring the reliability and validity of the methodology and results should be followed. Guidance for the NRC evaluation of surveys can be found in Appendix 95003.02-F, "Guidance for Evaluating Safety Culture Surveys." Such methods provide the NRC with some assurance of the validity and reliability of the results. In contrast, if the assessment does not follow such methods or meet such criteria, this should be considered in the NRC's decision regarding the scope of the NRC's graded safety culture assessment.

a. Inspection Preparation

1. The lead SCA should begin communicating with the licensee as early as possible during the planning and conduct of the third-party safety culture assessment to understand the assessment strategy. NRC SCAs should continue to observe and monitor the performance of this assessment to the extent possible. Care must be taken to minimize any potential adverse effects of the NRC's presence during assessment activities on participants' behavior and consequently the results. Generally, it would not be appropriate to observe the conduct of the third-party assessment interviews or focus groups. However, it would be appropriate to review the planned third-party assessment focus group protocols in advance, the licensee's interview and focus group notes used to develop the assessment, and any summary documents.

   Communicate frequently with the licensee to stay informed of the status of implementation activities, such as the conduct of the survey, analysis of the results, and any issues or insights that are developed. Be aware of how the licensee staff and third-party safety culture contractors resolve these issues.

2. No specific guidance.

3. Request the following from the licensee:

   (a) Tools and instruments used to conduct the third-party safety culture assessment, including questionnaires, surveys, interview guides, checklists, and the assessment charter.

   (b) Documents produced by the assessment team that conducted the licensee's most recent safety culture assessment. These include the assessment plan, surveys, interview plans and reports, status memoranda, briefing notes, and interim and final reports.

(c) Documents that characterize the licensee's response to the most recent safety culture assessment. These include memoranda, meeting notes, corrective action program records, project plans, or other initiatives that were associated with or were initiated as a result of the assessment.

(d) Names, qualifications, and contact information for the personnel who conducted the assessment.

Note: If the tools, instruments, or related licensee documents are proprietary, handle them in accordance with standard NRC procedures for handling proprietary information.

4. Request any safety culture assessments conducted at the site within the past five years. Identify trends, licensee actions to address issues raised by the assessments, and information regarding the effectiveness of the actions taken to resolve the identified issues.

5. Consult IMC 2515 Appendix B, Attachment 2, associated with Inspection Preparation.

b. Evaluation

1. The licensee's terminology may differ from NRC terminology for the same application. For example, the licensee may refer to safety culture traits by other terms such as safety culture attributes or principles, but the concepts addressed should be similar.

2. Determination of whether the licensee's third-party safety culture assessment was comprehensive

(a) It is important that an adequate number of functional groups and organizational levels were assessed. A safety culture assessment that only focuses on the functional groups with a direct nexus to safe plant operation (e.g., operations, maintenance, engineering, security) but excludes other support groups or contract organizations will be incomplete. Functional groups, such as human resources, financial services, some technical support organizations, and contractor groups often fulfill roles in the organization that are important in shaping the site's safety culture.

(b) Similar to the discussion in Section 2.(a). above, a safety culture assessment that focuses only on some of the organizational levels may bias the results.

(c) One critical question is whether the sample sizes were adequate to ensure that the assessment findings and conclusions were representative of the populations of interest.

(1) If the licensee's assessment team administered a survey in-person to groups of licensee employees and contractors and the assessment plan included participation from all site personnel, the survey respondent goal should be 80% of the site population.

(2) If the assessment plan administers a survey by mail or electronically, the survey response rate should typically fall between 60% and 70%.

(3) If the survey results were based on response rates that were lower than what was assumed in the licensee's assessment plan, determine if the licensee's assessment team collected and analyzed additional information to demonstrate that the results were adversely impacted.

For example, if the survey systematically excluded back-shift staff, it is unlikely that the results would be valid. If there are inconsistencies in response rates among functional groups, (e.g., some functional groups had very low survey response rates) the licensee's assessment team should have taken action to understand the reasons for the differences and the potential impact on the accuracy of the data and results.

Additional guidance related to sample sizes for individual and group interviews, structured behavioral observations, and event follow-up studies can be found in Enclosures 95003.02-C, 95003.02-D, and 95003.02-E, respectively.

(d) The safety culture traits are detailed in IMC 0310.

3. In determining whether the methods used by the third-party safety culture assessment team to collect and analyze the data were adequate and appropriate, consider the following:

(a) Verify that the licensee's third-party safety culture assessment contractor ensured that information obtained during the assessment was not attributable to specific individuals in any assessment report or in discussions with others who were not members of the assessment team.

(b) If the third-party safety culture assessment included interviews, then evaluate the interview questions, the method by which participants were selected, and the interview techniques used by the assessment team. For related guidance, see Attachment 95003.02, and Appendices 95003.02-B and 95003.02-C.

(c) If the third-party safety culture assessment included focus groups, then evaluate the focus group questions, the methods by which participants were selected, and the interview techniques used by the assessment team. For related guidance, see Attachment 95003.02 and Appendices 95003.02-B and 95003.02-C.

(d) If the assessment included document reviews, then evaluate the assessment team's selection of documents and their review methodology.

(e) If the assessment included direct observations of meetings and/or work activities, then evaluate the selection of meetings and activities to observe, the observers, and the observation methodology. If possible, observe similar meetings and/or work activities to place the assessment team's observations in proper context. For related guidance, see Attachment 95003.02 and Appendix 95003.02-D, "Guidance for Structured Behavioral Observations."

(f) If the assessment included a structured survey, then determine if acceptable survey practices were used. Evaluate the survey instrument used; a sample of raw survey data, including write-in comments (if available); survey results; documentation that describes how the survey was developed and the methods used to administer it; and the statistical analyses applied to the survey data to determine if acceptable survey practices were followed. For related guidance, see Appendix 95003.02-F.

(g) For each method used, determine whether the sample sizes were adequate to ensure that results from the method were representative.

(h) For each of the methods used, determine whether:

(1) any method was likely to introduce any systematic bias into the results;

(2) the methods were applied consistently; and

(3) if multiple methods were used, the third-party assessment team verified the consistency of the results obtained from the different tools and instruments.

(i) Do not consider normative data from other sites or other industries that the licensee considered when developing third-party safety culture assessment insights, unless the licensee also provides information that permits the verification of the applicability of the normative data (e.g., nature of the norms, sample sizes, procedures followed in obtaining the samples, etc.).

4. To determine whether the licensee's safety culture assessment team members were independent and qualified, consider the following:

(a) Verify that the third-party safety culture assessment team did not include any members of the licensee's organization or utility operators of the plant.

(b) Determine whether the assessment team members who developed the safety culture assessment and analyzed the results were qualified through education and/or experience. Team members should have knowledge and experience conducting safety culture and organizational assessment activities, particularly at nuclear facilities. If the assessment included a survey, verify that the team included members with survey design, administration, and analysis expertise.

(c) Determine whether the safety culture assessment team included members with knowledge in the technical areas and organizational issues being assessed.

5. Review the following items related to the licensee's third-party safety culture assessment results:

- A sample of the assessment team's interviews and observation notes;
- Overall functional group survey responses;
- Statistical analyses and results; and
- Responses from previous assessment activities, if the same or similar survey questions were used, for comparison to current results.

Evaluate these items to determine the quality and accuracy of:

- The assessment team's interpretation of the data collected;
- Rollup or summaries in capturing issues and themes from the data; and
- The results that were communicated to the licensee.

03.11 NRC Graded Safety Culture Assessment Planning

a. The scope of the NRC's graded safety culture assessment will be based on the results of the evaluation of the licensee's third-party safety culture assessment. The lead SCA will make this determination, in consultation with the team and Regional management. The scope will depend on factors such as the quality of the third-party safety culture assessment scope, methods, sampling, and analysis, and the qualifications of the third-party safety culture assessment team.

   In some cases, the timing of the third-party safety culture assessment and the initiation of the IP 95003 inspection may allow the staff to evaluate the adequacy of the third-party safety culture assessment methodology prior to implementation. The team will communicate any methodology concerns to the licensee. Based on the actions of the licensee and/or third-party safety culture assessment team to address NRC concerns, the NRC's graded safety culture assessment may be revised accordingly.

   1. The licensee's activities to communicate the assessment results to management and staff should be evaluated to understand the messages provided. Obtain documentation regarding the licensee's dissemination of the third-party safety culture assessment results, such as emails, newsletters, and briefing materials. Request department and working group specific information, including any talking points provided to managers and supervisors.

   2. If the review conducted under Section 02.11 does not identify any weaknesses in the assessment methods, conclusions, or team qualifications, then the graded safety culture assessment should be focused on the licensee's response to the assessment results. For example, if the assessment identified problems in any safety culture traits or weaknesses in certain groups, then the licensee's response to those problems, to the extent they are available, should be evaluated. Depending on the timing of the IP 95003 inspection, the licensee may not have made significant progress in developing or implementing corrective actions. In this case, the effectiveness of corrective actions may need to be evaluated during inspection follow-up activities. The lead SCA should discuss this with the team leader and determine how best to conduct the evaluation.

   3. If weaknesses are noted in portions of the third-party safety culture assessment, the graded safety culture assessment should be adjusted to gather additional information in those areas. For example:

      (a) If there were functional groups that were not adequately represented in the assessment, either excluded from the scope or had low response rates, conduct appropriate activities such as, focus groups, interviews, and observations to evaluate if those groups have any weaknesses in safety culture traits. For groups with low survey response rates, review any third-party assessment conclusions that discuss the reasons for the low participation rate and evaluate the licensee's response.

(b) If the assessment did not include all organizational levels (e.g., senior management, corporate management, etc.), conduct appropriate activities to gather information and assess the impact on the site's safety culture, including any attitudes and behaviors that may be inconsistent with those described in the safety culture traits.

(c) If issues are identified with the sample sizes, conduct appropriate assessment activities (e.g., focus groups and interviews) with groups that were inadequately sampled to determine if there are safety culture issues the licensee's assessment failed to identify.

(d) If any of the safety culture traits are determined to be inadequately assessed, conduct assessment activities to evaluate those components using Appendices 95003.02-A through F. Coordinate with the other inspection team members who may be focusing on related areas, particularly for components related to the SPA of Identifying, Assessing, and Correcting Performance Deficiencies and the Human Performance Key Attribute.

4. If specific weaknesses or concerns are identified with the third-party safety culture assessment team's methods, conclusions, or qualifications, the NRC's graded safety culture assessment should be adjusted to gather additional information in those areas. Conduct limited assessment activities to evaluate whether the licensee's third-party safety culture assessment results are consistent with those developed by the NRC.

   (a) If issues were identified with licensee safety culture assessment methods, the NRC SCA's should independently conduct those activities. For example, if problems were identified with the conduct of focus groups or with interview techniques, the NRC should conduct its own focus groups or interviews.

   Note: The NRC does not conduct surveys. Therefore, for weaknesses identified in survey methodology, the NRC will use other techniques, such as those described in Appendices 95003.02-C through F to evaluate the survey results.

   (b) The NRC's graded safety culture assessment should initially focus on functional groups with a direct nexus to safe plant operations (e.g., operations, engineering, maintenance) and those with known problems identified through the third-party safety culture assessment or by other means and be expanded as needed.

   (c) Based on the results of this assessment, adjust the scope as appropriate. For example, if the NRC's data validates results from the licensee third-party safety culture assessment, then the focus of the NRC graded safety culture assessment can be shifted to the licensee's response to the results to the extent actions have been conducted or planned. However, if assessment inconsistencies are identified, the scope of the graded safety culture assessment should be broadened to include additional assessment methods, increasing the range of functional groups, and targeting additional safety culture traits.

   (d) In planning assessment activities, such as developing the assessment tools and designating assignments, follow the guidance in Section 1.b. from Attachment 95003.02 to ensure the use of multiple methods and team members so that information is collected independently.

5. If substantial weaknesses are identified with the licensee's third-party safety culture assessment or the NRC has low confidence in the validity of the licensee's results, the NRC should determine whether an independent safety culture assessment should be conducted to gain more accurate insights on the contribution of safety culture weaknesses to licensee performance. If an independent NRC safety culture assessment is needed, follow the guidance in Attachment 95003.02 to conduct this assessment.

b. Review Attachment 95003.02 regarding the conduct of the NRC's independent safety culture assessments and Appendices 95003.02-C through F regarding specific data collection methods. Apply the guidance to plan the graded safety culture assessment, including the development of the assessment methods and tools. Be aware of the potential overlap between other inspection focus areas and the graded safety culture assessment activities (e.g., in certain safety culture traits or functional groups), and apply the data and insights from these other areas to the extent possible.

c. The lead SCA will identify and communicate resource needs to the team, Regional, and program office management. Depending on the focus of the assessment activities, specific expertise, such as those possessed by Headquarters staff and/or contractors, may be necessary to conduct the graded safety culture assessment. The level of resources will depend on the scope and can be affected by the number of licensee staff at the site. After resources are identified, the lead SCA will assign specific activities based on the expertise and experience of the SCAs and other inspection team members, and schedule meetings and/or briefings as needed to communicate relevant information and assignments.

d. No specific guidance.

03.12 NRC Graded Safety Culture Assessment Performance

a. Follow the scope and implement the plan developed in Section 02.12.

1. Evaluate the accuracy and scope of the communications provided to licensee management and staff regarding the third-party safety culture assessment. Consider asking participants in any focus groups and interviews conducted about the communications and evaluate the effectiveness of these licensee communications.

2. Evaluate the licensee's response to weaknesses identified in any safety culture traits, to the extent they are available.

(a) Determine whether the licensee identified these weaknesses in their corrective action program.

In some cases, corrective actions may involve sensitive areas such as personnel actions or other matters that warrant confidentiality. These types of information may not be documented in any corrective action programs and must be solicited or inferred from discussions with licensee officials, such as Human Resources staff or senior management. The lead SCA should evaluate these circumstances and conduct activities to gather this information as needed. The lead SCA should determine the extent of involvement of and knowledge by other team members in these activities on a limited and need-to-know basis.

(b) Determine whether the licensee's evaluations of identified weaknesses were appropriate, and the resulting planned corrective actions appear adequate for resolving those weaknesses.

The breadth and depth of corrective actions should be appropriate to produce the desired changes in the organization's characteristics, attitudes, and behaviors that define the organization's safety culture. For a discussion on what these concepts involve, review the introduction section of Attachment 95003.02. Although short-term or limited scope actions such as training or personnel changes can have a positive impact, effective corrective actions for producing lasting change in aspects of culture require a long-term focus. Discrete activities such as communications (e.g., stand-downs, publication of policies) and training sessions should be reinforced and evaluated for effectiveness. The licensee should have plans in place to monitor long-term progress and the capability and flexibility to adjust corrective action plans as needed.

(c) Determine whether the licensee has made reasonable progress in implementing the corrective actions.

In making this determination, consider the types of actions and the timeframe of the desired results. The licensee may implement some actions aimed at creating immediate changes or near-term improvements and others focused on long-term changes. It is important to note that some cultural changes may require timeframes of several years or longer to develop, depending on the circumstances. However, short term progress can be made and should be monitored. Depending on the timing of the inspection, evaluate the progress made based on the types of corrective actions and their intended effects.

(d) Depending on the circumstances, the licensee may not have made significant progress in developing or implementing corrective actions, or the corrective actions in place may require additional time to determine whether they are effective. In these cases, the corrective actions will need to be evaluated during inspection follow-up activities later. The lead SCA should discuss this with the team leader and determine how to most effectively conduct these follow-up activities.

3. If a limited scope NRC safety culture assessment is conducted, determine whether the results of the licensee's overall assessment of safety culture, including the third-party safety culture assessment and any other relevant activities, are consistent with the results obtained by the NRC assessment by answering the following questions:

- Are the results of NRC's data collection methods generally consistent with the results of the licensee's methods?
- Do similar functional groups show differing results?
- Did either assessment identify weaknesses in particular safety culture traits?
- Did the NRC SCAs reach the same general conclusions relative to the safety culture traits?

If significant inconsistencies exist between the NRC's results and the licensee's results, then request the licensee to identify the reasons for each inconsistency. This

may require the licensee to perform additional assessment activities. In addition, consider expanding the scope of the NRC's assessment, including broadening the functional areas and/or increasing the depth to which applicable safety culture traits are evaluated.

4. The lead SCA has the flexibility to propose adjustments to the scope of the graded safety culture assessment to the inspection team leader, based on factors such as insights from the data, similarities and discrepancies between NRC and licensee results, licensee response and actions, and other emerging issues. The lead SCA should keep the team leader fully apprised of potential changes and coordinate changes in the scope and associated resources.

5. If an independent NRC safety culture assessment performed, follow the detailed guidance in Attachment 95003.02 to conduct the assessment.

6. It is important to note that the disclosure of any sensitive information received, reviewed, or collected by the NRC inspection team must be limited to only those who have a specific need-to-know for completing their inspection requirements. For example, although it may be necessary for an SCA and/or inspector to review case files from the licensee's ECP, the SCA and/or inspector should report only the overall conclusions from the review to the team.

b. Based on the results from the licensee's third-party safety culture assessment and the NRC's graded safety culture assessment, follow the guidance in Section 2.e. of Attachment 95003.02 when compiling the data. Determine whether any trends or themes in a particular safety culture trait exist and work with the entire team to determine the contribution of any identified safety culture trait weaknesses to the findings being identified in the inspection and to the affected SPAs.

03.13 NRC Self-Assessment.

Perform a limited review of the NRC's assessment and inspection process at the subject facility. All team members should be involved in the assessment of their subject areas. Overall level of effort should be commensurate with the team's findings and the licensee's underlying performance issues.

a. Should the results of this inspection indicate that a significant reduction in safety has occurred, compare the team's findings with licensee PIs and inspection findings to determine whether the NRC's Reactor Oversight Process appropriately monitored and responded to declines in licensee performance prior to the performance issues that resulted in the licensee's transition to Column 4 of the ROP Action Matrix. If the results of this inspection indicate that a significant reduction in safety has not occurred, compare the team's findings with the current assessment data to identify inconsistencies in the plant performance data.

b. Evaluate whether the NRC's assessment process appropriately characterized licensee performance based upon the data that was provided. Evaluate for example, whether inspection findings were appropriately screened using the Significance Determination Process (SDP) for risk significance, and whether this data was appropriately entered into the NRC's ROP Action Matrix.

c. IMC 0307, “Reactor Oversight Process Self-Assessment Program,” requires the periodic collection of samples to assess the effectiveness of ROP revisions. Insights into the effectiveness (or ineffectiveness) of changes, including those emerging from previous IP 95003 supplemental inspections, should be provided to CNRI/DOCP for consideration in sample selection and assessment. IMC 0307, “Reactor Oversight Process Self-Assessment Program,” provides additional guidance.

95003-04 RESOURCE ESTIMATE

The resource estimates provided are, unless otherwise indicated, for on-site direct inspection activities only, based on a three-week on-site inspection. The estimates below are provided to assist with planning; however, it is acknowledged that each instance where this IP would be invoked will be unique. As a result, actual performance is expected to differ from these estimates as site specific considerations are factored into the planning process. Not all areas will be performed during each inspection and the hours required to compete each area may be increased or decreased depending on site-specific circumstances. For planning purposes, the ROP budgets 3000 hours (distributed among the four regions) to conduct one IP 95003 inspection per year. The resource estimates are not requirements and inspection staffing needs are based upon site-specific circumstances.

Position/Inspected Area	Hours
Team Leader	120
Assistant Team Leader	120
Licensee Control Systems	240
Licensee's Safety Culture Assessment	120-160
Safety Culture Assessment Activities	80-360
Design	360
Human Performance	120
Procedures	120
Equipment Performance	120
Configuration Control	240
EP without Attachment 95003.01	80
EP with Attachment 95003.01	*160
Occupational Radiation Safety	200
Public Radiation Safety	60
Safeguards	200
Senior Reactor Analyst	0-120
Review of Assessment Process	40 (Non-Direct Inspection)

* A remedial exercise, if performed, is expected to require an additional 40 hours to complete, increasing the estimated EP effort from 160 to 200 hours.

95003-05 PROCEDURE COMPLETION

Meeting the inspection objectives defined in Section 95003-01 of this IP will constitute completion. Refer to IMC 0305, "Operating Reactor Assessment Program," for additional regulatory actions and considerations for a licensee transitioning to Column 4 of the ROP Action Matrix.

95003-06 REFERENCES

IMC 0305, "Operating Reactor Assessment Program"

IMC 0308, "Reactor Oversight Process Basis Document"

IMC 0310, "Aspects Within Cross-Cutting Areas"

IMC 0335, “Changes, Tests, and Experiments”

IMC 0609, “Significance Determination Process”

IMC 0611, Appendix C, “Documenting Supplemental Inspections”

IMC 0612, “Issue Screening”

IMC 2515, “Light-Water Reactor Inspection Program - Operations Phase”

IMC 2515, Appendix B, “Supplemental Inspection Program”

IP 41500, “Training and Qualification Effectiveness”

IP 42001, "Emergency Operating Procedures"

IP 42700, “Plant Procedures”

IP 71114.03, “Emergency Response Organization Staffing and Augmentation System”

IP 71114.05, “Maintenance of Emergency Preparedness”

IP 71130.16, Security Performance (Official Use Only – Security Related Information)

IP 71152, “Problem Identification and Resolution (PI&R)”

IP 71841, “Human Performance”

IP 82001, “Evaluation of Emergency Preparedness”

IP 82001.01, “ERO Performance Drills”

IP 82001.02, “ERO Performance Drills Dose Assessment”

IP 82001.04, “Facilities and Equipment”

IP 82001.05, “Procedure Quality”

IP 93002, “Managing Fatigue”

IP 95001, “Supplemental Inspection Response to Action Matrix Column 2 (Regulatory Response) Inputs”

IP 95002, “Supplemental Inspection Response to Action Matrix Column 3 (Degraded Performance) Inputs”

NUREG 1220, "Training Review Criteria and Procedures"

RG 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants"

10 CFR 19.12, “Instruction to Workers”

10 CFR 20.1206, “Planned Special Exposures”

10 CFR 20.1208, “Dose Equivalent to an Embryo/Fetus”

10 CFR 26 Subpart I, “Managing Fatigue”

10 CFR 50.49, “Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants”

10 CFR 50.54, “Conditions of Licenses”

10 CFR 50.59, “Changes, Tests and Experiments”

10 CFR 50.65, “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants”

10 CFR 50.120, “Training and Qualification of Nuclear Power Plant Personnel”

END

List of Attachments:

IP 95003.01 Emergency Preparedness
IP 95003.02 Conducting an Independent NRC Safety Culture Assessment
Attachment 1: Revision History for IP 95003

Attachment 1: Revision History for IP 95003

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional Non-Public Information)
N/A	04/03/00 CN 00-003	Initial Issue.	Training Required – Type and Date Undocumented	
N/A	01/17/02 CN 02-001	Revised to incorporate lessons learned from Indian Point 2 inspections, and adds a section on security, which was not included in the initial version of this procedure.	No	
C1	ML062970393 10/26/06 CN 06-030	Revised procedure to incorporate safety culture enhancements as required by the Safety Culture Initiative (ref: Staff Requirements - SECY-04-0111 - Recommended Staff Actions Regarding Agency Guidance In The Areas Of Safety Conscious Work Environment And Safety Culture.)	Training Required – Type Undocumented 07/01/06	ML062980489
N/A	ML080040267 01/15/09 CN 09-002	Procedure revised to incorporate the results of the ROP safety culture lessons learned evaluation (reference SECY 06-0122). Changes made for ROP feedback forms 95003-1233, 95003-1234, 95003-1235, 95003-1261, 95003-1238.	None	ML083430521
N/A	ML092680677 11/09/09 CN 09-026	Added reference to IP 93002, “Managing Fatigue”	None	N/A
N/A	ML102020551 02/09/11 CN 11-001	Defined procedure completion criteria and add reference section.	None	ML110120516

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional Non-Public Information)
N/A	ML15188A400 12/18/15 CN 15-031	Formatted headings to provide 2-levels of Navigation Pane functionality. Addressed ROP Feedback Form 95003-1960 ML15309A667 (Replace “safety culture components” with “safety culture traits.”); Partially addressed ROP Independent Assessment (ML14035A571) Recommendation 1 (Clarify expectations for the timing of supplemental inspections for Column 4 of the ROP Action Matrix, or portions thereof, to ensure that the NRC’s assessment of continued operation and consideration of additional regulatory actions are completed in a timely manner); ROP Feedback Forms 95003-1967 (ML15309A709) (Perform effectiveness reviews approximately 2 years after each post 95003 supplemental inspection self-assessment) -1976 (ML15309A269) (Incorporate Browns Ferry Red Finding supplemental Inspection Best Practices); and -1991 (ML15309A713) (perform an effectiveness review of recommendations implemented following Agency assessments of IP 95003 efforts).	None	ML15204A507 95003-1960 ML15309A667
N/A	ML16050A095 06/07/22 CN 22-012	Relocated General Requirements and Guidance common to Supplemental Inspections to IMC 2515 Appendix B “Supplemental Inspection Program” to reduce unnecessary replication. Addresses and closes ROP FBFs 95003-2288 and 95003-2317. IMC 0040 format exception approved by IRIB branch chief.		ML21312A540 Closed FBFs 95003-2288 ML21312A535 95003-2317 ML21312A537

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional Non-Public Information)
	ML26224A333 10/23/26 CN 26-050	Revised to reflect changes to inspection procedures as a result of ROP rebaselining. These revisions were recommended as a result of the ADVANCE Act 507 Report to congress that discussed the revision of the ROP Baseline Inspection Program.	N/A	ML26238A305