January 3, 1997

FOR: The Commissioners

FROM: James M. Taylor /s/
Executive Director for Operations

SUBJECT: MILLSTONE RESTART REVIEW PROCESS

PURPOSE:

To inform the Commission of the processes and approaches that the Nuclear Regulatory Commission (NRC) staff will use to oversee the corrective action programs at Millstone Nuclear Power Station, Units 1, 2, and 3.

SUMMARY:

This paper presents the staff's plans that will be used to direct the review of Northeast Nuclear Energy Company's (NNECO's, licensee's) corrective action activities at Millstone Nuclear Power Station. The staff plans to apply the guidelines provided in NRC Inspection Manual Chapter 0350, "Staff Guidelines for Restart Approval," to the restart approvals of Millstone Units 1, 2,

and 3. A restart panel has been established to oversee and coordinate NRC's restart review activities.

Until the staff was informed by the licensee at a public meeting on

December 17, 1996, that it intended to pursue restart of all three units in parallel, Unit 3 was considered to be the lead plant for restart. Therefore, much of the NRC's activities to date have been focused on Unit 3 and are discussed in this paper. As noted throughout the paper, the staff will develop its plans for assessing restart readiness of Units 1 and 2 similar to that which has already been accomplished for Unit 3.

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415-1200

The restart panel has issued a restart assessment plan for Unit 3 to track and monitor all expected NRC actions required to be taken before the staff will forward a recommendation for restart. The staff has also developed preliminary plans for oversight of the Independent Corrective Action Verification Program (ICAVP) required by the NRC.

BACKGROUND:

On November 4, 1995, the licensee shut down Millstone Unit 1 for a planned refueling outage. During an NRC investigation of licensed activities at

Millstone Unit 1, in the fall of 1995, the NRC staff identified potential violations regarding refueling practices and operation of the spent fuel pool cooling systems that were inconsistent with the Updated Final Safety Analysis Report (UFSAR). The NRC issued a letter to the licensee on December 13, 1995, requiring that, before the restart of Millstone Unit 1, it inform the NRC, pursuant to Section 182a of the Atomic Energy Act of 1954, as amended, and Section 50.54(f) of Title 10 of the Code of Federal Regulations (10 CFR), of the actions taken to ensure that in the future it would operate that facility according to the terms and conditions of the plant's operating license, the Commission's regulations, and the plant's UFSAR.

In January 1996, the NRC designated the units at Millstone as Category 2 plants on the NRC's watch list. Plants in this category have weaknesses that warrant increased NRC attention until the licensee demonstrates a period of improved performance. On February 20, 1996, the licensee shut down Millstone Unit 2 when it declared both trains of the high pressure safety injection (HPSI) system inoperable because of a design issue (there was a potential that the HPSI throttle valves could become plugged from debris when in the sump recirculation mode). On March 30, 1996, the licensee shut down Millstone Unit 3 after it found that containment isolation valves for the auxiliary feedwater turbine-driven pump were inoperable because the valves did not meet NRC requirements. In response to (1) a licensee root cause analysis of Millstone Unit 1 UFSAR inaccuracies that identified the potential for similar configuration-management conditions at Millstone Units 2 and 3, and (2) design configuration issues identified at these units, the NRC issued 10 CFR 50.54(f) letters to the licensee on March 7 and April 4, 1996. These letters required that the licensee inform the NRC of the corrective actions taken regarding design configuration issues at Millstone Units 2 and 3 before the restart of each unit.

In June 1996, the NRC designated the units at Millstone as Category 3 plants on the NRC's watch list. Plants in this category have significant weaknesses that warrant maintaining them in a shutdown condition until the licensee can demonstrate to the NRC that it has both established and implemented adequate programs to ensure substantial improvement. Plants in this category require Commission authorization to resume operations.

On August 14, 1996, the NRC issued a confirmatory order directing the licensee to contract with a third party to implement an ICAVP to verify the adequacy of its efforts to establish adequate design bases and design controls. The ICAVP is intended to provide additional assurance, before unit restart, that the licensee has identified and corrected existing problems in the design and configuration control processes.

On October 24, 1996, the NRC issued an order directing that, before the restart of any Millstone unit, the licensee develop and submit to the NRC a comprehensive plan for reviewing and dispositioning safety issues raised by its employees and ensuring that employees who raise safety concerns can do so without fear of retaliation. The order also directs the licensee to retain an independent third party to oversee implementation of its comprehensive

plan.

On November 3, 1996, the NRC created a new organization, the Special Projects Office (SPO), within the Office of Nuclear Reactor Regulation (NRR), to provide a specific management focus on future NRC activities associated with the Millstone units. The SPO's responsibility for future activities at Millstone includes all licensing and inspection activities required to support an NRC decision on restart of the Millstone units.

DISCUSSION:

The significance and number of issues identified at Millstone have resulted in the continued shutdown of all three units pending the licensee's completion of its corrective actions and NRC's verification and formal authorization to restart. NRC regulatory oversight of the licensee's corrective actions will require extensive planning and program integration by the staff. Specific elements of the staff's approach for oversight of Millstone are described in this paper.

Staff planning for the conduct of NRC regulatory oversight programs at Millstone is based on the recognition that it is the licensee's primary responsibility to demonstrate that corrective actions have been effectively implemented. Before NRC can reach a decision to approve restart, the licensee must determine that the plants conform with applicable NRC regulations, license conditions, and the UFSARs and that applicable licensing commitments have been met. The licensee's compliance with NRC regulations, license conditions, and licensing commitments is fundamental to establish NRC's confidence in the safety of licensed activities.

The staff's approach for oversight at Millstone is designed to ensure that the licensee will carry out a comprehensive, broad-scope program to identify and correct its weaknesses. Recently, in a December 17, 1996, public meeting, the licensee provided its revised plans for recovery of Millstone Units 1, 2 and 3. The principle elements of their planning for restart includes: 1) system readiness; 2) organizational readiness; 3) operational readiness, and 4) regulatory readiness. The licensee has indicated that the Millstone Unit 3 Configuration Management Plan (CMP) continues to be its principal program to provide reasonable assurance that design-bases weaknesses have been effectively corrected. Similar plans exist for Millstone Units 1 and 2. The CMP includes both efforts to understand the licensing- and design-bases issues that led to NRC issuance of the 10 CFR 50.54(f) letters and actions to prevent recurrence of those issues. The licensee described its CMP objective to document and meet the units' licensing- and design-bases requirements, and its intention to ensure that adequate programs and processes exist to maintain control of these requirements.

To verify the adequacy of actions by the licensee, the NRC staff is planning a comprehensive and multi-faceted oversight program. The need for close evaluation of the licensee's programs and results is underscored by the breadth and significance of the problems identified at Millstone. Although, as a practical matter, NRC verification cannot include a 100-percent verification of licensee programs, NRC oversight is planned to provide confidence that the licensee has implemented its corrective actions. As described in this paper, independent third-party evaluations required by the NRC will be used to enhance NRC confidence that the licensee's corrective action programs have been effectively implemented.

Inspection Manual Chapter 0350

NRC Inspection Manual Chapter (MC) 0350, "Staff Guidelines for Restart Approval," establishes the guidelines for approving the restart of a nuclear power plant after a shutdown resulting from a significant event, a complex hardware problem, or a serious management deficiency. The staff originally issued this guidance in March 1990 in response to a May 1989 audit by the General Accounting Office (GAO) of NRC's restart actions for Peach Bottom. The GAO found that NRC's restart approval actions were reasonable, but that the NRC needed to establish criteria to ensure a consistent process is used to assess readiness for restart. The primary objective of the guidelines in

MC 0350 is to ensure that NRC's restart review efforts are appropriate for the individual circumstances, are reviewed and approved by the appropriate NRC management levels, and provide objective measures of restart readiness.

MC 0350 also states that the Advisory Committee for Reactor Safety (ACRS) may review the restart process to independently evaluate NRC's and the licensee's actions. The staff will include an opportunity for ACRS review in its Millstone oversight planning.

As a result of NRC concerns regarding the overall effectiveness of the licensee's management, the staff will apply the guidelines of MC 0350 to the restart approvals of Millstone Units 1, 2, and 3. MC 0350 states that the staff should develop a plant-specific restart action plan for NRC oversight of each plant startup. The restart action plan is to include those issues listed in MC 0350 that the NRC restart panel (discussed below) has deemed applicable to the reasons for the shutdown. The plan may also include additional issues determined to be applicable to the specific situation. The restart action plan is to include all expected NRC actions required to be taken before the NRC approves a plant for restart. Accordingly, the staff will use the restart action plan to track and monitor all significant NRC actions necessary to support a decision on restart approval.

With the recent formation of the SPO, the Acting Director of NRR and the Region I Regional Administrator have consolidated many of the functions and responsibilities of both the region and NRR, as described in MC 0350, within the SPO. The specific changes in the functions and responsibilities have been incorporated into the discussions below.

Millstone Restart Panel

For each plant restart subject to oversight in accordance with MC 0350, regional and headquarters management normally establishes a restart panel to oversee and coordinate NRC's restart activities. The function of the restart panel, as described in MC 0350, is to maintain and update the restart action plan, review the licensee's corrective actions, maintain an ongoing overview of licensee performance, and provide a written recommendation regarding restart based on the completion of the licensee's corrective actions. The restart panel will also modify, as necessary, the restart action plan to address emergent issues that require use of NRC resources.

The Millstone Restart Panel has been established to fulfill the functions described in MC 0350. The panel consists of the following members from the SPO:

- Director, SPO (Chairman)
- Deputy Director, Inspections
- Deputy Director, Licensing
- Deputy Director, ICAVP Oversight
- Chief, Inspections Branch
- Project Managers
- Senior Resident Inspectors
- Division of Reactor Safety Coordinator

Millstone Restart Assessment Plan

In accordance with MC 0350, the Millstone Restart Panel has issued the plant-specific restart action plan, titled the "Millstone Unit 3 Restart Assessment Plan" (RAP, Attachment 1). [Note: Unit 3 has been the primary focus of the licensee's recovery/restart activities. On December 17, 1996, the licensee announced a major redirection towards parallel corrective actions for all 3 units.] The RAP consists of several major elements that require resolution before plant restart and relate to the root causes for the decline in licensee performance. These elements include the corrective action programs, work planning and control improvements, procedure upgrade programs, employee concerns, and quality assurance and management oversight improvements. The plan also includes staff activities to evaluate the licensee's response to NRC's 10 CFR 50.54(f) letters regarding Millstone Units 1, 2, and 3, and completion of the ICAVP. The actions listed in the MC 0350 generic restart checklist that are applicable to Millstone, such as those regarding management effectiveness and self-assessment capability, are also included in the plan. The plan provides for the conduct of an operational safety team inspection (OSTI), which is normally carried out to assess the overall readiness of the plant for startup after a prolonged shutdown. Other issues in the Millstone Unit 3 RAP that require NRC review before restart are pending 10 CFR 2.206 petitions, enforcement actions, and allegations.

The RAP contains two enclosures: the Significant Issues List and the Process Check List. The Significant Issues List is a list of actions and issues that the staff intends to review before any restart recommendation for Millstone Unit 3. The Process Check List is a list of tasks based on the MC 0350 generic restart checklist that guides the general NRC restart review process.

The RAP is a "living" document that the Millstone Restart Panel will revise as it identifies emergent issues and inspection activities that are completed. The panel recently revised the RAP to reflect the formation of the SPO. It will be further revised to include activities needed to address the October 24, 1996, order regarding employee concerns. The RAPs for Units 1 and 2 are likely to contain the same programmatic issues as the Unit 3 RAP, supplemented with plant-specific technical issues.

Independent Corrective Action Verification Program

The ICAVP audit required by the NRC is expected to provide independent verification, beyond the licensee's quality assurance and management oversight programs, that the licensee's corrective action programs have identified and satisfactorily resolved existing nonconformances with the design and licensing bases; documented and utilized the licensing and design bases; and established programs, processes, and procedures for effective configuration management. The ICAVP, with oversight by NRC, is required to be completed before the restart of each of the Millstone units and is included as an element in the RAP. NRC's ICAVP oversight activities are discussed in more detail in Attachment 2.

The Director of NRR has established a branch, headed by a Senior Executive Service manager, that is responsible for overseeing the implementation of the ICAVP. This branch reports to the Director, SPO. The staff's oversight objectives are to ensure that the review by the ICAVP contractor is independent of the licensee and its design contractors, is performed by qualified individuals, and is comprehensive, incorporating appropriate engineering discipline and operational reviews. As part of the RAP, NRC oversight of the ICAVP will support the MC 0350 restart assessment process by providing important insights to the restart panel regarding (1) the effectiveness of the licensee's root cause analysis process, (2) the effectiveness of the licensee's corrective actions, (3) the licensee's compliance with the licensing basis, (4) the effectiveness of the licensee's design and configuration control processes, and (5) the licensee's process for deferring completion of certain corrective actions until after restart. These insights are necessary to ensure the licensee's readiness to restart. The ICAVP oversight staff will provide information to the restart panel on issues and observations identified during all phases of the ICAVP process. The restart panel will use this information to update, as necessary, the RAP. To facilitate the communication of information, the Deputy Director, ICAVP Oversight, will be a member of the restart panel. The results of the ICAVP review are expected to provide the NRC with critical insights for determining whether the licensee has been thorough in its identification and resolution of configuration control problems at the Millstone units.

As stated in the August 14, 1996, order, the NRC must approve the ICAVP contractor proposed by the licensee. Members of the public have expressed concern about the process used to select and approve this contractor. The principal concerns relate to the potential for bias by a contractor that derives a substantial portion of its income through work in the commercial nuclear power industry and has been selected and paid by the licensee. The staff has built checks and balances into the ICAVP contractor selection and implementation processes to assist in ensuring independence. For example, the independent contractor organization will have no current involvement with the unit being reviewed, will have had limited prior involvement, and will not have ownership interest in the licensee. Further, the individual contractor reviewers will have had no prior involvement with the unit being reviewed and have no current financial interest in the licensee, such as ownership of stocks or bonds or participation in the pension plan. This approach recognizes the practical difficulty in identifying a technically competent organization that has no previous involvement with the licensee. On December 18, 1996, the licensee submitted information to the NRC on its proposed ICAVP contractor (Sargent and Lundy). The staff is currently reviewing the adequacy of this contractor's qualifications and independence.

The staff is developing a communications protocol to ensure that communication between the licensee and the ICAVP contractor occurs in an open forum. (Additional aspects of public openness and participation are presented later in this paper.) This protocol will require that representatives of the NRC monitor interactions during which technical issues are discussed either by telephone or in person between the contractor and the licensee. As stated in the order, the ICAVP contractor will provide its findings concurrently to both the licensee and the NRC. The staff will evaluate the contractor's reviews and findings throughout the ICAVP. The contractor will also periodically provide to the NRC its comments on the licensee's proposed resolution of the its findings and recommendations. These documents will be placed in the NRC Public Document Room. In addition, to maintain independence from the licensee, the contractor will conduct most of the ICAVP review activities at a location remote from the Millstone site to minimize interaction between the contractor and the licensee.

The licensee has indicated that its review scope for Unit 3 will include approximately 80 structures, systems, and components that it has categorized through the implementation of the maintenance rule as either Group 1 (safety-related and risk-significant) or Group 2 (safety-related or risk-significant). The ICAVP audit must provide insights into the effectiveness of the licensee's programs so that the results, either positive or negative, can be reasonably extrapolated to the systems that were not reviewed in the audit. Accordingly, the scope of the ICAVP must be broad enough to give the NRC confidence that the current configuration of each unit is in conformance with its licensing basis.

The NRC will review, and must approve, the ICAVP contractor's plan for implementing the ICAVP. As such, the NRC will determine the scope and depth of the ICAVP. The ICAVP contractor's audit plan for each unit will include a justification for its proposed scope and depth as a method for evaluating the effectiveness of the licensee's corrective action programs. The staff has determined that the ICAVP audit should be conducted using a multi-tiered approach. For Unit 3, in the first tier, four systems will be selected to provide a representative sample by which to test the thoroughness of the licensee's review in identifying potential nonconformances with the design and licensing bases. (Attachment 2 provides additional information on ICAVP sample size.) The ICAVP contractor will review the design and operational aspects of these systems in depth, including maintenance, surveillance, training, and corrective actions for identified deficiencies. The number of systems selected for Tier 1 evaluations at Units 1 and 2 will be determined as additional information is obtained by the staff.

The second tier of the ICAVP contractor audit will address Group 1 and Group 2 systems that are not reviewed in Tier 1. These system reviews will be more limited in scope than those performed on the Tier 1 systems. The objective of these reviews is to identify and review some critical design characteristics of the systems that are important to ensure that these systems can perform their specified functions. The ICAVP contractor will propose a list of systems and characteristics to be reviewed to the NRC for approval. The scope (i.e., the systems and design characteristics) of the Tier 2 review will be determined by the staff following its evaluation of the ICAVP contractor's audit plan. Accident mitigation functions would be a specific focus of the Tier 2 reviews. This effort will not include a review of passive design considerations such as seismic design, piping and pipe hangers, and environmental qualification. The Tier 1 review will examine these aspects in sufficient depth to provide insights into the licensee's conformance with the licensing basis. The Tier 2 review will achieve additional assurance of the adequacy of the licensee's programs by broadening the scope of the review to other Group 1 and 2 systems.

The third tier of the ICAVP contractor audit will be a review of examples of the implementation of various processes used by the licensee to change or modify the facility. A sample of changes, randomly selected from among the licensee's design change processes, will be evaluated by the ICAVP contractor. The Tier 3 reviews will provide insights into the effectiveness of the licensee's processes that control the plant's configuration.

The staff plans to use the following process to select the specific systems to be evaluated in the Tier 1 reviews. Following the review of the contractor's proposed audit plan for Unit 3, the staff will select four systems to be reviewed using objective elements such as risk significance, system characteristics and complexity, previous opportunities for introducing inappropriate changes to the system or design bases, and previous problems with a system. Prior to finalizing its selection of four systems, the staff will offer to the Connecticut Nuclear Energy Advisory Council (NEAC), the opportunity to recommend one or two systems using any method that it deems appropriate. The NRC will consider including one or both of the systems recommended by the NEAC. This would address the public concern regarding the potential for the list of systems to be disclosed to the licensee before the start of the ICAVP. A similar two-part process is planned for system selections at Units 1 and 2.

In addition to overseeing the ICAVP contractor, the staff will perform an independent inspection, similar to the ICAVP three-tier audit discussed above. At Unit 3, the staff plans to conduct independent vertical-slice inspections of two systems, one within the scope of the ICAVP and one outside the scope, to provide additional assurance regarding the adequacy of the licensee's and the ICAVP contractor's reviews. Similar inspections will be used at Units 1 and 2. The staff will evaluate the final results of the ICAVP contractor's audit and assess the licensee's corrective actions. Additional details regarding the staff's inspection activities are included in the ICAVP Oversight Plan (Attachment 2).

Licensee Restart Items List

The licensee's ongoing problem identification activities in response to the 10 CFR 50.54(f) letters for Millstone Units 1, 2, and 3 have already resulted in the identification of several thousand design and configuration-management deficiencies. The licensee has developed a list of these deficiencies, which vary in scope and safety significance. This list contains deficiencies that must be corrected before restart and others that the licensee is planning to correct after restart. The NRC staff will review the list of deficiencies that the licensee proposes to correct after plant restart. The NRC staff conducted a preliminary review of the Millstone Unit 3 deficiency list in October 1996 and found the licensee's characterization of the deficiencies generally appropriate. In its continuing reviews of the deficiency list, the NRC staff will ascertain whether the licensee has appropriately scheduled safety-significant items for completion before restart, and whether those items that the licensee will defer until after restart are appropriate.

In addition to the deficiencies identified by the configuration-management corrective action activities, the licensee also maintains lists of work items identified in its routine work control and corrective action processes. These lists comprise such items as procedure upgrades, design changes, work orders, and administrative deficiencies. These lists will be reviewed as part of the routine inspection program and the OSTI. The NRC staff will assess the

overall safety significance of the lists of open work items and evaluate whether they are being effectively managed.

Employee Concerns

The October 24, 1996, order requiring independent third-party oversight of the licensee's implementation of the resolution of employee concerns issues requires the licensee to submit, for NRC approval, a proposal for an independent, third-party organization that would oversee implementation of the licensee's employee concerns activities. NRC staff approval of the organization will be contingent on a finding that personnel proposed to accomplish the oversight function are independent and qualified to perform the tasks specified in the order. The order also requires that the licensee submit, for NRC review, a comprehensive plan for reviewing and dispositioning safety issues raised by its employees and ensuring that employees who raise safety concerns are not subject to discrimination. The order further requires that the third-party oversight organization submit, for NRC review and approval, an oversight plan for conduct of its activities. The staff is developing approaches for reviewing these licensee plans and their implementation and will keep the Commission informed of their status.

In a letter dated November 25, 1996, the licensee requested an extension of 30 days to submit a proposed third-party organization to review the employee concerns process. The staff granted the extension on December 12, 1996.

Public Participation

The staff will continue to ensure that the public has the opportunity to raise questions about the evaluation process or the substantive technical issues being addressed in the restart process. The staff has solicited public participation in the Millstone restart process during meetings near the Millstone site. These meetings have provided information about such topics as 10 CFR 2.206 petitions, the licensee's corrective action programs, licensee and NRC restart plans, employee concerns, and the ICAVP. As the restart assessment process continues, the staff will conduct public meetings near the Millstone site to discuss the restart plans and the results of NRC's oversight activities. To the extent practicable, the staff will also hold technical meetings with the licensee at the Millstone site, rather than at NRC regional or headquarters offices. These meetings will be open for public observation. However, there will be a need to conduct some meetings at NRC headquarters or Region I, such as periodic briefings of the Commission.

The NRC has invited representatives from both the State of Connecticut and the NEAC, constituted by the Connecticut State legislature, to observe activities associated with NRC's oversight of the ICAVP process. Representatives from the NEAC have agreed to observe the activities associated with NRC's oversight of the ICAVP and have signed a memorandum of understanding with the NRC. The NEAC has designated two observers and two alternates. The staff has also participated in several meetings with the NEAC regarding Millstone restart activities.

Restart Authorization Process

The process for NRC authorization to restart is described in detail in MC 0350. When the restart review process has reached a point where relevant issues have been identified, corrected, and reviewed, a restart authorization process is begun. Normally, the restart panel provides a recommendation for restart approval to the Regional Administrator. In Millstone's case, the SPO Director has been delegated the responsibilities and authority of both the Regional Administrator and the Associate Director for Projects, NRR. Since the attention of the SPO Director will be focused exclusively on Millstone activities, he will chair the restart panel. The SPO Director will forward the restart panel's recommendation for restart approval through the Director of NRR to the Executive Director for Operations (EDO). The EDO, after discussions with the SPO Director, the Regional Administrator, and the Director of NRR, will then forward the recommendation to the Commission regarding restart for each Millstone unit.

In addition, the staff normally briefs the Commission (1) after the staff has agreed to a corrective action plan and (2) about a month before the licensee anticipates a plant restart. Because of the scope and depth of the corrective actions for Millstone, the staff plans to hold periodic status briefings for the Commission.

RECOMMENDATION:

It is my intention to take the following actions unless, within the next 10 working days, the Commission directs otherwise.

1. Continue to implement the attached Restart Assessment Plan, and any subsequent revisions approved by the Millstone Restart Panel, for Millstone Unit 3.

2. Implement the attached ICAVP Oversight Plan, including plans for ICAVP scope and system selection processes, and any subsequent revisions approved by the Director, SPO, for Millstone Unit 3.

The staff will continue to keep the Commission informed of its planning and activities regarding NRC oversight at Millstone through periodic status briefings.

James M. Taylor
Executive Director for Operations

Attachments:
1. Restart Assessment Plan
2. ICAVP Oversight Plan

ATTACHMENT 1

MILLSTONE UNIT 3

RESTART ASSESSMENT PLAN

Approved: _____ Date: _____
William D. Travers, Director
Special Projects Office

MILLSTONE
RESTART ASSESSMENT PLAN

1.0 BACKGROUND

The three Millstone units are shut down to formulate responses to a series of 10 CFR 50.54(f) letters requiring them to affirm their compliance with the conditions of each unit's license and NRC regulations. The NRC performed a series of inspections at Units 2 and 3 with a 20 person Special Inspection Team (SIT) to ascertain the extent of the unit's compliance. Currently, the results of those inspections are under assessment by the team and NRC management. The licensee is focusing on Unit 3 as the lead plant for restart.

On June 28, 1996, the Executive Director for Operations (EDO) issued a letter to the licensee that stated the Commission had decided to place the three Millstone units in Category 3 on the Watch List and would vote on the restart of the Millstone units. The staff will implement the appropriate aspects of NRC Manual Chapter 0350, "Staff Guidelines for Restart Approval" for the restart of all three units. The NRC will schedule and implement its inspection program after the licensee has indicated that the activities necessary for restart are complete and ready for inspection. The NRC has been dealing with Northeast Utilities on broader performance issues which go beyond the 10 CFR 50.54(f) concerns. These broader concerns are considered contributory causes for the current poor performance, which the 10 CFR 50.54(f) issues are a subset. These issues have been formalized by the licensee in a program titled "Improving Station Performance" (ISP) and are topics that will be addressed by the licensee and reviewed by the NRC Millstone Restart Assessment Panel. A meeting conducted on April 30, 1996, disclosed that the licensee was neither adequately managing its program nor tracking progress.

The salient concerns embodied in the ISP include leadership, communications (employee concerns), the corrective action program, procedural adherence and procedure upgrades, work planning and control, and operational enhancements. The NRC restart assessment program will focus on the broader issues of the ISP, licensee self assessments, and management oversight, recognizing the necessity to complete the 10 CFR 50.54(f) process. The NRC plan for inspection of the Improving Station Performance issues is discussed in more detail in Section 3 of this plan.

On November 3, 1996, the agency established the Special Projects Office (SPO) to consolidate NRC efforts under a single Senior Executive Service manager who reports to the Director of Nuclear Reactor Regulation (NRR).

2.0 10 CFR 50.54(f) ACTIVITIES

Each Millstone unit has been requested to submit information describing actions taken to ensure that future operations will be conducted in accordance with the terms and conditions of the unit's operating license, the Commission's regulations, and the Updated Final Safety Analysis Report. The NRC requested that the information be submitted no later than 7 days prior to the restart of the respective Millstone units. In the May 21, 1996, letter, the NRC requested that NU provide for each unit its plans for completing the licensing bases reviews.

To aid in NRC understanding of how deficiencies were identified and dispositioned, the NRC's May 21, 1996, letter also requested that NU provide for each Millstone unit a comprehensive list of design and configuration deficiencies and information related to how each deficiency was identified and will be dispositioned.

On August 14, 1996, the NRC issued a Confirmatory Order establishing an Independent Corrective Action Verification Program (ICAVP). The independent effort will verify the adequacy of NU's efforts to establish adequate design bases and design controls, including translation of the design bases into operating procedures and maintenance and testing practices, verification of system performance, and implementation of modifications since issuance of the initial facility operating licenses. NRC oversight of the ICAVP and activities will be separate from, and in addition to, the activities described in this restart assessment plan (RAP). The ICAVP results will be incorporated into this restart plan and considered a significant part of the decision regarding recommended restart. The deficiencies found by the licensee as a result of the 50.54(f) letters will be evaluated by the Millstone Restart Panel to identify restart issues.

3.0 MC 0350 PROCESS

Millstone Unit 1 entered a routine refueling outage in October 1995. At the January 1996 Senior Management Meeting, the site was placed on the "Watch List" for various reasons, including a concern for regulatory compliance. On December 13, 1995, the NRC sent a 10 CFR 50.54(f) letter requiring the licensee to certify compliance with the regulatory requirements before restarting the unit. Subsequently, Millstone Units 2 and 3 were sent similar letters which required responses before restart.

The NRC Inspection Manual Chapter 0350, "Staff Guidelines For Restart Approval", provides guidelines and a list of tasks and activities that should be considered before a plant that has been shut down for cause can restart. Because of NRC concerns relating to the licensee's management effectiveness, the appropriate aspects of MC 0350 will be applied to the restart of Units 1, 2 and 3 to ensure applicable requirements have been met (Enclosure 2).

The regional inspection effort will focus on selected areas of the ISP and completing the routine inspection program requirements. This assessment plan will be maintained and updated by the Millstone Restart Panel. It is intended that the restart panel will identify new issues to be added to the plan as the Millstone facilities' restart plans evolve; there is no intent to require NRC senior management approval for minor changes to this assessment plan.

The Director, SPO, in coordination with the Office of the EDO, and the Director of NRR, will make a recommendation regarding restart. SPO will inform the Commission of the staff's and licensee's restart activities through Commission papers, periodic briefings, and communications to the EDO. The Commission will then vote on whether to approve the restart of each Millstone unit.

3.1 SPECIAL PROJECTS OFFICE

The Special Projects Office was created on November 3, 1996, to oversee the restart of the Millstone units. The intent of the change was to consolidate the NRC resources devoted to the restart efforts under one SES manager. The office is organized into three primary elements: licensing, inspection and independent corrective action verification program oversight. The Licensing Branch will administer the typical licensing actions performed in NRR. The Inspection Branch will implement the inspection programs normally managed from the region, and the ICAVP Oversight Branch will oversee the licensee's licensing and design bases review process.

Within the SPO, the restart panel will meet to assess the licensee's performance and its progress in completing the designated restart activities. The restart panel is composed of the Director, SPO (chairman); the Deputy Directors of Licensing, Inspections, and Independent Corrective Action Verification Program Oversight; the Project Managers for the three Millstone units, the Inspection Branch Chief, the Senior Resident Inspectors for the three Millstone units, and the appointed Division of Reactor Safety representative. The function of the Millstone Restart Panel is described in Manual Chapter 0350.

3.2 MILLSTONE OPERATIONAL READINESS PLAN

On July 2, 1996, NU submitted the Unit 3 Operational Readiness Plan, which was discussed at a July 24, 1996, meeting and updated at an August 19, 1996, meeting. However, the licensee has replaced many of the line managers. With these replacements, the submitted plan for Unit 3 and the proposed plans for Units 1 and 2 are being changed substantially. The restart panel will review these plans and hold periodic public meetings with the licensee to discuss the schedule for implementation and coordination of NRC restart activities.

The deficiency lists associated with the restart plans for each unit, which will be updated periodically by the licensee, include restart and deferred items, and will be audited by the NRC to verify the acceptability of the criteria used to defer items from the restart list.

3.3 CORRECTIVE ACTION PROGRAM

The NU corrective action program has been weak in ensuring comprehensive and effective corrective actions. There are many instances of narrowly focused corrective actions that failed to address all aspects of the underlying problem. Additionally, the licensee has failed to follow up on corrective actions to ensure they were effective. Consequently, the restart panel has determined that any restart effort should examine the current state of the licensee's corrective action program. Because of the large number of Adverse Condition Reports (ACR) being identified by the licensee's staff, the NRC resident and regional inspection staff will concentrate on issues for each unit identified by the ACR process and audit the licensee's corrective actions for completeness. The staff has selected level "A" and "B" ACRs for review. Additionally, other ACRs will be examined to provide a spectrum of safety-significant and lesser risk issues. The initial list of selected Unit 3 items is contained in Enclosure 1.

The intent of this effort is to primarily assess the corrective action program while dealing with the safety-significant technical issues. Examination of the corrective action program must include review of the Action Requests (AR) from the Action Item Tracking and Trending System (AITTS) program, which is an extension of the ACR process, and commitments regarding violations and inspection items. Further, significant information of use in assessing the licensee's corrective action program is derived from the normal inspection program, where valuable insights regarding the effectiveness of corrective actions are routinely collected from technical safety inspections.

Additionally, the NRC ICAVP Oversight Branch will assess the licensee's corrective actions for design-related degraded and non-conforming conditions. Finally, the Operational Safety Team Inspection (OSTI) will audit portions of the corrective action process during the course of its activities.

Demonstration of improvements in the process will be judged by the completeness of the licensee's corrective actions for each of the inspected ACRs. There must be a high ratio of successfully completed ACRs to the total population inspected. There should only be minor comments regarding the processing, evaluation, directed corrective actions and closure of an issue.

3.4 WORK PLANNING AND CONTROLS (C.4.)[(1)]

Work planning and controls are other areas in which the licensee has shown weakness. The ability to plan, control and complete work is fundamental to implementing adequate corrective actions. Effective work planning and controls are prerequisites for reducing and managing backlogs. Weak work planning and control was demonstrated during the Unit 2 outage wherein tagging boundary violations resulted in an extensive corrective effort by the licensee. Work control and planning were also issues at Unit 1, and resulted in a management meeting.

There will be a complete review of the Automated Work Order (AWO) process by the resident or regional staffs. The AWO process is an integral part of the work planning and control system and is instrumental in establishing the scope of the work, providing the appropriate procedures, and establishing the tagging boundaries. Consequently, the Unit 1 resident staff has been directed to use the available initiative inspection hours to do a comprehensive inspection of the AWO process, which is a site-wide process.

The OSTI will assess the engineering and maintenance backlogs during its operational readiness inspection. The OSTI will determine if there are safety-significant issues that must be resolved before restart.

3.5 PROCEDURE UPGRADE PROGRAM (C.3.3.E)

The quality of and adherence to procedures has been a chronic problem at the Millstone site. The issue was an element in "Improving Station Performance" and was one of the subjects of discussion at the periodic meetings between Northeast Utilities and the NRC. In response to NRC concerns, the licensee developed the Procedure Upgrade Program in the early 1990's to improve station procedures.

The resident inspectors will relate procedural inspection findings back to the procedural upgrade program (PUP), identifying whether the procedures reviewed during the course of an inspection have been upgraded and characterize the quality of the document. This will establish a basis for assessing the effectiveness of the licensee's PUP. The NRC staff will develop an inspection plan for examining selected portions of each unit's individual efforts.

3.6 OVERSIGHT (C.1.4)

The licensee has identified its oversight function as deficient through self assessments and external and internal audits and as a contributing factor in the licensee's declining performance. The report of Assessment of Past Ineffectiveness of Independent Oversight by Yankee Atomic examined the failure of Quality Assessment Services, the Independent Safety Evaluation Group, and the Nuclear Review Board to identify the deficient UFSAR control process and the radioactive waste conditions. They found that management did not support these functions adequately.

In addition, the Joint Utilities Management Association (JUMA) issued its report on July 17, 1996, concluding in part that the quality assurance program audits, surveillances, and inspections were not effective in the implementation of their mission and resolution of identified problems. In addition, the JUMA audit found that recommendations for improving QA effectiveness identified in previous QA internal and external assessments had not been addressed.

The NRC assessment of the nuclear oversight function will be addressed as part of the restart panel's review of the ISP program and through insights gained from the normal inspection program. In addition, the NRC will perform a special inspection of the oversight function using the services of its Human Factors Assessment group. Late in the restart process for each unit, there will be an inspection to evaluate the effectiveness of the oversight groups and management's utilization of the oversight process. There should be positive indications that the oversight function has been made an integral part of the licensee's management team assessment process. The oversight function should result in meaningful findings, have access to line management and provide assessments of process and program effectiveness through periodic reports. There should be evidence that the reports are forwarded to the responsible manager and that management has dealt with the contents appropriately. Oversight should be adequately staffed with qualified and experienced personnel. The audit and surveillance programs need to be clearly defined, proceduralized, and implemented with established schedules.

3.7 ENFORCEMENT

Outstanding enforcement items will be reviewed to determine if any issues require closure before plant restart. The outstanding restart enforcement items will be added to the NRC Significant Issues List. The agency is currently accumulating escalated enforcement items concerning the spent fuel pool and design bases issues which may require a licensee response before recommending restart of each unit. There are also potential enforcement items that may result from the efforts of the Office of Investigations, the allegation process review group, the Office of the Inspector General, the Special Inspection Team, routine resident and regional inspection efforts and the 10 CFR 2.026 petition process.

A Pre-decisional Enforcement Conference was held with the licensee on December 5, 1996, to discuss 64 individual apparent violations. The licensee did not contest any of the violations at the conference, and the staff is in the process of finalizing the enforcement package.

3.8 EMPLOYEE CONCERNS

The Millstone site has had a chronic problem in dealing effectively with employee concerns. The NRC continues to receive an inordinate number of allegations from the staff at the Millstone site. The current series of 10 CFR 50.54(f) letters were initiated as a result of an allegation and subsequent 10 CFR 2.206 petition concerning the Unit 1 spent fuel pool. The NRC has issued two enforcement actions for harassment and intimidation to Northeast Utilities in the past three years and has a current escalated enforcement action pending.

The NRC initiated two task groups to examine Northeast Utilities' handling of employee concerns, and the recent layoffs that affected several previous allegers. With regard to handling of employee concerns, the task group identified a number of root causes for the licensee's problems in this area. The task group also concluded that past problems and their root causes still remain. Subsequently, the NRC issued an order, dated October 24, 1996, requiring NU to establish a comprehensive program to address employee concerns, and hire an independent party to oversee the implementation of the program. The output from these two task groups and the licensee's response to the order will be reviewed for restart issues.

3.9 SIGNIFICANT ISSUES LIST

The technique to be used for the restart assessment will be for NRC to review and approve the licensee's proposed restart issues list, ensure that the licensee imposes controls on adding, removing, or deferring items from the list, have the SPO staff review the list to ensure it includes issues of interest to the NRC, and have the SPO staff review the deferred list to ensure that appropriate rationales for deferral have been documented (See item B.4.3. of MC 0350). As the result of the 10 CFR 50.54(f) activities, the licensee initially determined that about 600 items did not meet criteria for inclusion as restart items. The resident inspector, assisted by headquarters staff, reviewed this list and confirmed that the licensee adequately assessed the discrepancies. This process will be used in the restart assessment of each unit. The restart panel will determine that the licensee's restart issues list includes appropriate restart items from licensee programs such as ACRs, ARs (AITTS), engineering work requests, and commitments.

The enclosed NRC Significant Issues List for Unit 3 (Enclosure 1) contains items that are being used to audit and evaluate licensee programs such as the corrective action process and significant safety/regulatory technical issues.

Restart issues will meet at least one of the following criteria:

1. Resolution of the issue is required to ensure safe operation of the facility, to include satisfaction of the technical specifications or licensing basis.

2. Inspection of the issue will provide an insight to an identified programmatic deficiency such as the corrective action system.

3. Inspection of the issue will provide assessment of management effectiveness or personnel performance.

3.10 RESTART INSPECTION

Selected portions of NRC Inspection Procedure 93802, "Operational Safety Team Inspection," will provide the framework for a team inspection of each unit during restart. The procedure scope will be modified to address pertinent issues at Millstone. The inspection will cover self-assessments by the licensee, the licensee's implementation of its startup plan, control room observations during the approach to criticality and power ascension, selected systems readiness inspection and observation of management oversight.

The resident inspectors will provide close monitoring of each unit during mode changes to ensure compliance with each unit's technical specifications and UFSAR design bases.

3.11 PLANT PERFORMANCE REVIEW

On May 16-17, 1996, the Millstone Oversight Team conducted a Plant Performance Review (PPR). The PPR was used to identify issues that needed to be inspected for the Millstone Station. The review identified several issues that warrant NRC inspection before plant restart of the unit. The unit-specific issues as well as station-wide issues identified by the PPR are contained in the Significant Issues List for each unit as inspection items.

3.12 LICENSE AMENDMENTS

Millstone Unit 3 currently has two license amendments required for startup in the review process. They concern: 1) changing the over-temperature ΔT time constants and the steam line pressure negative rate high steam line isolation time constant; and 2) changing operational modes with both shutdown margin monitors inoperable and revising the locked valve list. It is expected that additional license amendments may be required prior to restart.

ENCLOSURE 1

REF.	ITEM	RESP.	STATUS(2)

ACR 10733	RSS AND QSS PIPING TEMPERATURE MAYBE HIGHER THAN ANALYZED (NRR REVIEW ENG. ANALYSIS, DRS INSPECT INSTALLATION)	NRR/DRS	UPDATE IR96-06
	DEGREE FSAR NEEDS TO BE UPDATED BEFORE RESTART	SPO	
ACR 05715	REACTOR POWER INCREASE WHEN UNBORATED CATION DEMIN PLACED INTO SERVICE 3CHS-DEMIN2	SPO	CLOSED IR96-08
ACR 01895	EDG SEQUENCER CDA SIGNAL OUTPUT "A" TRAIN COMPONENTS STARTED	DRS	CLOSED IR96-09
ACR 01844	FAILURE TO ENTER AN ACTION STATEMENT WHEN MSIVS WERE CLOSED	SPO	
ACR 04199	RCP SEAL INJECTION FILTER "B" GASKET FAILED RESULTING IN SPILL OF COOLANT TO FLOOR DRAINS	SPO	CLOSED IR96-08
ACR 06092	RCS CHECK VALVE BODY TO BONNET LEAK; 3 RCS*V146	SPO	CLOSED IR96-06
ACR 01535	WHILE DEWATERING SPENT RESIN, THE WASTE TEMPERATURE IN THE LINER RAISED FROM 90 TO 310 F	SPO	CLOSED IR96-06
ACR 10543	NEED FOR ADDITIONAL REVIEW OF RESPONSE TIME TESTING FOR PROCEDURES	DRS	
ACR 11322	CLOSURE OF PIR WITHOUT ADDRESSING DESIGN FEATURE OF AFFECTED COMPONENTS	SPO	
ACRs 10774, 10780	TURBINE DRIVEN AUX FEEDWATER DESIGN CONCERN	SPO	*
ACR 6323	CONTAINMENT FOUNDATION EROSION	NRR	
ACRs 96-0326, 13427	CCP SYSTEM OPERATION ABOVE DESIGN TEMPERATURE; 3 RHS*HCV 606/607 FAILING OPEN	SPO	* UPDATE IR96-08
ACR 7745	SGCS OPERATIONAL CONFIGURATION CONTROL	DRS	
ACR 96-0159	LETDOWN HEAT EXCHANGER LEAKAGE AND DESIGN DISCREPANCIES	SPO	UPDATE IR96-06
Unit 2 ACR 01935	DUAL FUNCTION VALVE CONTROL AND TESTING	SPO/NRR	
ACR 7266	RCP SEAL HOUSING LEAKAGE AND BOLT CORROSION	DRS	
ACR 10562, PPR G.2	CONTROL AND USE OF VENDOR INFORMATION	DRS	*
	RESOLUTION OF AFW VALVES AND HELB	DRS	*
	REVIEW OUTPUT FROM HANNON'S EMPLOYEE CONCERNS REPORT	SPO	
	REVIEW ENFORCEMENT AND UNRESOLVED ITEMS FOR RESTART ISSUES	SPO	
IR96-201	REVIEW NRR SPECIAL TEAM FINDINGS FOR RESTART ISSUES	SPO	*
	REVIEW ALLEGATIONS FOR RESTART ISSUES	SPO	
	REVIEW ALL OPERABILITY DETERMINATIONS AND BY-PASS JUMPERS BEFORE RESTART	SPO	
	FATIGUE CYCLE OPEN ITEMS IP 37750	DRS	COMPL.
	PART 70 STORAGE AND INVENTORY IP 84750	DRS	COMPL.
	REVIEW TRM FOR TECH. SPEC. INTERPRETATIONS	SPO/DRS	
	FORMALITY OF NON-ROUTINE SECURITY ACTIVITIES AND NEW FUEL SECURITY IP 81064	DRS	CLOSED IR96-05
ESSIG MEMO	LACK OF ON SHIFT DOSE ASSESSMENT CAPABILITY	DRS	
URI 96-01-08	OVERLAP TESTING OF RPS/ESF	DRS	
	REVIEW LICENSEE EVENT REPORTS FOR RESTART ISSUES.	SPO	

	MATERIAL, EQUIP. AND PARTS LIST (MEPL) PROGRAM EVALUATION	NRR	*
ACRs 96-277, 278, 627, 8805,12862	MOTOR OPERATED VALVE PROGRAM GL89-10	DRS	
PPR G.1.C, G.2	RESIDENT EMPHASIS:MISSED SURVEILLANCES/TEST CONTROL	SPO	CLOSED IR96-08
PPR G.1.C	RESIDENT EMPHASIS: DILUTION EVENTS	SPO	CLOSED IR96-08
PPR G.1.C	RESIDENT EMPHASIS: FEEDWATER HAMMER	SPO	CLOSED IR96-01
PPR G.1.C, ACR 96-0855	RESIDENT EMPHASIS: AFW CHECK VALVE LEAKAGE	SPO	
PPR G.1.C, G.2	RESIDENT EMPHASIS: WORK-AROUNDS AND ABUSE OF USE-AS-IS DEFICIENCIES	SPO	
PPR G.2	RESIDENT EMPHASIS: AWO QUALITY AND BACKLOG CONTROL	DRS	
PPR G.2	RESIDENT EMPHASIS: SEISMIC II/I	SPO	*
	EFFLUENT/ENVIRONMENTAL SAMPLING AND ANALYTICAL PROFICIENCY	DRS	IR96-09 (SCHED)
	RADWASTE SYSTEMS/CONTROLS	DRS	UPDATE IR96-08
	HEAT EXCHANGER PERFORMANCE (GL-89-07/89-13)	DRS	
IR96-04	REVIEW LICENSEE CORRECTIVE ACTION PROGRAMS FOR EFFECTIVENESS TO INCLUDE ACR's AND NCR's	SPO	
	REVIEW 0737 ACTION ITEMS FOR COMPLETION	SPO	
	REVIEW ENGINEERING BACKLOGS	DRS	
	REVIEW 50.54F ISSUES FOR RESTART	SPO/NRR	
ACR 7007	REVIEW SELF ASSESSMENT ROOT CAUSES AND VERIFY CORRECTIVE ACTIONS (IP40500)	SPO ISP	
	FIRE PROTECTION PROGRAM	DRS	
ORDER	PHASE II OF THE ICAVP	SPO	
ACRs 12116, 96-0325	CYCLE 6 BORON DILUTION ANALYSIS POTENTIALLY NON-CONSERVATIVE AND PGS FLOW RATE TO CHARGING PUMPS MAY BE IN ERROR	DRS	
ACRs 96-0524, 08897	INITIAL SETTINGS FOR ECCS THROTTLE VALVES INADEQUATE AND POTENTIAL CLOGGING	SPO	UPDATE IR96-06
ACR 96-0183	LOW PRESSURE SAFETY INJECTION PENETRATIONS	SPO	
ACR 96-0391	RHR HEAT EXCHANGER BOLTING SUSCEPTIBLE TO BORIC ACID	DRS	
ACR 10397	LLRT "AS FOUND" TOTAL LEAKAGE EXCEEDED MAX ALLOWABLE		CLOSED IR 96-08
ACR 96-0324	FUEL TRANSFER TUBE BELLOWS SEAL CONNECTION NOT TESTED		CLOSED IR 96-08
ACR 96-0446	DOCUMENTATION OF CONTAINMENT SYSTEMS DISCREPANCIES	DRS	
ACRs 96-0339, 96-0389	WALWORTH VALVE YOKE GENERIC ISSUE	DRS	
ACR 10795	SWP TEMPERATURE SWITCHES DEFEATED BY BYPASS JUMPER FOR SWP*P3A1B (BOOSTER PUMPS)	SPO	*
ACR 96-0449	PIECES OF ARCOR FOUND IN 3RSS*E1A AND 3RCC*E1C	SPO	UPDATE IR96-09

ACR 96-0181	NUMEROUS BOLTS ON BACK DOOR ON 4160V SWITCHGEAR MISSING		CLOSED IR96-08
ACR 96-0467	FAST TRANSFER TEST FAILURES	DRS	CLOSED IR96-09
ACR 12495	SHUTDOWN MARGIN MONITOR ALARM SETPOINT		CLOSED IR96-05
ACRs 96-0080, 96-0081	POTENTIAL ELECTRICAL SEPARATION VIOLATIONS	DRS	
ACRs 96-0557, 96-0685	THERMAL RELIEF VALVE SETPOINTS	SPO	*
ACRs 96-0775, 9124, 0846	USE OF BORAFLEX IN SFP RACKS	SPO	
ACRs 96-0718, 0821	ANALYSIS OF SOV FAILURE MODES	SPO	UPDATE IR96-09
U2 ACR 7923	EEQ PROCESS	DRS	
ACR 13788	TSP BASKET SAFETY EVALUATION POSSIBLY NOT VALID	SPO	
ACR 96-0396	3MSS*MOV17D MISSED IST SURVEILLANCE REQUIREMENT	SPO	CLOSED IR96-08
ACR 08614	REACTOR PROTECTION LEAD LAG CIRCUITS MAY BE SET NONCONSERVATIVELY		CLOSED IR96-05
ACR 96-0745	SIL/SIH VALVES POWERED FROM NONSAFETY TRAIN	NRR	
ACR 96-0483	CCP AND CCE NON-Q COMPONENTS CAUSE Q-COMPONENTS NOT TO FAIL SAFE	SPO	
ACR 96-0621	SBO POSSIBLE OVERLOAD IN EVENT OF AN SIS ACTUATION	DRS	*

ENCLOSURE 2

MILLSTONE UNIT 3
RESTART APPROVAL

The following items recommended by the guidance in MC 0350 are considered applicable to the restart of Millstone Unit 3:

Control of long-term corrective actions. X SPO

REF.			APPL.	STATUS	RESP
4.01	**Director, Special Projects Office (SPO)** Notifies the Executive Director for Operations (EDO) and the Commission, as appropriate, of the NRC actions taken concerning shutdown plants and the proposed followup plan.		X	C	NRR
4.02	**Director, SPO**				
	a.	Discusses with the Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations and Research, the Office of Enforcement (OE), and NRR, as appropriate, the need for an order or confirmatory action letter (CAL) specifying the actions required of the licensee to receive NRC approval to restart the plant and the proposed followup plan.	X	C	RA
	b.	Decides, in consultation with the NRR Associate Director for Projects, whether this manual chapter applies to a specific reactor restart.	X	C	RA
	c.	In coordination with the NRR Associate Director for Projects, decides whether to establish a Restart Panel.	X	C	RA
	d.	Develops a written Restart Assessment Plan, including a case-specific checklist, to assign responsibilities and schedules for restart actions and interactions with the licensee and outside organizations.	X	C	DSPO

	e.	Coordinates and implements those actions prescribed in the Restart Assessment Plan that have been determined to be the Special Project Office's responsibility. These include, when appropriate, interactions with State and local agencies and with regional offices of Federal agencies.	X		DSPO
	f.	In conjunction with NRR, reviews and determines the acceptability of licensee's corrective action program.	X		SPO OSTI NRR
	g.	Approves restart of the shutdown plant after approval/vote by the Commission.	X		EDO
4.03	**Director, SPO** a.Acts as the focal point for discussions within NRR to establish the appropriate followup actions for a plant that has been shut down.		X		DSPO
4.04	**Deputy Director, Licensing**				
	a.	Coordinates participation in followup conference calls and management discussions to ensure that the Director, SPO, is directly involved, when appropriate, in followup action.	X		SPO
	b.Coordinates and implements actions prescribed in the Restart Assessment Plan that have been determined to be Licensing's responsibility. These include, where applicable, appropriate NRC Office or NRR Division interaction with other Federal agencies (e.g., Federal Emergency Management Agency (FEMA), Department of Justice (DOJ)) pursuant to any applicable Memoranda of Understanding.		X		SPO
B.1	**INITIAL NRC RESPONSE** The facts, the causes, and their apparent impacts should be established early in the process. This information will assist the NRC in characterizing the problems, the safety significance, and the regulatory issues. Early management appraisal of the situation is also important to ensure the proper immediate actions are taken. The following items should have been completed or should be incorporated into the CSC as appropriate. Refer to Section 5.02 of this manual chapter for additional information.				
	a.	Initial notification and NRC management discussion of known facts and issues.	NA		
	b.	Identify/implement additional inspections (i.e. AIT, IIT, or Special).	NA		
	c.	Determine need for formal regulatory response (i.e. order or CAL).	NA		
	d.	Identify other parties involved (i.e., NRC Organizations, other Federal agencies, industry organizations).	NA		
B.2	**NOTIFICATIONS** Initial notification of the event quickly communicates NRC's understanding of the event and its immediate response to the parties having an interest in the event. Notification to regional and headquarters offices of cognizant Federal agencies may be appropriate. As the review process continues, additional and continuing notifications may be required.				
	a.	Issue Daily and Directors Highlight.	NA		
	b.	Issue preliminary notification.	NA		
	c.	Conduct Commissioner assistants' briefing.	NA		
	d.	Issue Commission paper.	NA		
	e.	Cognizant Federal agencies notified (i.e., FEMA, EPA, DOJ).	NA		
	f.	State and local officials notified.	NA		
	g.	Congressional notification.	NA		
B.3	**ESTABLISH AND ORGANIZE THE NRC REVIEW PROCESS**				
	a.	Establish the Restart Panel.	X	C	RA
	b.	Assess available information (i.e. inspection results,licensee self-assessments,	X		SPO

		industry reviews).			
	c.	Obtain input from involved parties both within NRC and other Federal agencies such as FEMA, EPA, DOJ.	X		SPO
	d.	Conduct Director SPO briefing.	X		SPO
	e.	Conduct NRR Executive Team briefing.	X	C	SPO
	f.	Develop the case-specific checklist.	X	C	SPO
	g.	Develop the Restart Assessment Plan.	X	C	SPO
	h.	Director SPO approves Restart Assessment Plan.	X	C	DSPO
	i.	NRR Director approves Restart Assessment Plan.	X	C	DONRR
	j.	Implement Restart Assessment Plan.	X		SPO
	k.	Modify order as necessary.	X		DONRR
B.4	**REVIEW IMPLEMENTATION**				
B.4.1	**Root Causes and Corrective Actions**				
	a.	Evaluate findings of the special team inspection.	X		OSTI SPO
	b.	Licensee performs root cause analysis and develops corrective action plan for root causes.	X		OSTI
	c.	NRC evaluates licensee's root cause determination and corrective action plan.	X		SPO OSTI
B.4.2	**Assessment of Equipment Damage** For events where equipment damage occurs, a thorough assessment of the extent of damage is necessary. A root cause determination will be necessary if the damage was the result of an internal event. The need for independent NRC assessment should be considered. The licensee will need to determine corrective actions to repair, test, inspect, and/or analyze affected systems and equipment. These actions are required to restore or verify that the equipment will perform to design requirements. Equipment modifications may also be required to ensure performance to design requirements. Potential offsite emergency response impact for external events such as natural disasters, explosions, or riots should be considered. NRR should obtain information from FEMA headquarters reaffirming the adequacy of State and local offsite emergency plans and preparedness if an event raises reasonable doubts about emergency response capability.				
	a.	Licensee assesses damage to systems and components.	NA		
	b.	NRC evaluates licensee damage assessment.	NA		
	c.	Licensee determines corrective actions.	NA		
	d.	NRC evaluates corrective actions.	NA		
B.4.3	**Determine Restart Issues and Resolution** The establishment of the restart issues that require resolution before restart demands a clear understanding of the issues and the actions required to address those issues by both the NRC and the licensee. This section outlines steps to determine the restart issues and NRC's evaluation of their resolution.				
	a.	Review/evaluate licensee-generated restart issues.	X		SPO
	b.	Independent NRC identification of restart issues.	X		SPO
	c.	NRC/licensee agreement on restart issues.	X		SPO
	d.	Evaluate licensee's restart issues implementation process.	X		SPO

	e.	Evaluate licensee's implementation verification process.	X		SPO
B.4.4	**Obtain Comments** Since some shutdowns involve a broad number of issues, solicitation of comments from diverse sources may be appropriate. The decision to solicit comments from a group and the level of participation should be made on a case-by-case basis. Input from these groups should be factored into the restart process when they contribute positively to the review. Note: If needed, comments concerning the adequacy of state and local emergency planning and preparedness must be obtained from FEMA headquarters through NRR.				
	a.	Obtain public comments.	X		SPO
	b.	Obtain comments from State and Local Officials.	X		SLO
	c.	Obtain comments from applicable Federal agencies.	X		SPO
B.4.5	**Closeout Actions** When the actions to resolve the restart issues and significant concerns are substantially complete, closeout actions are needed to verify that planned inspections and verifications are complete. The licensee should certify that corrective actions required before restart are complete and that the plant is physically ready for restart. This section provides actions associated with completion of significant NRC reviews and preparations for restart.				
	a.	Evaluate licensee's restart readiness self-assessment.	X		SPO OSTI
	b.	NRC evaluation of applicable items from Section C "ISSUES" complete.	X		SPO
	c.	Restart issues closed.	X		SPO OSTI
	d.	Conduct NRC restart readiness team inspection.	X		OSTI
	e.	Issue augmented restart coverage inspection plan.	X		OSTI
	f.	Comments from other parties considered.	X		SPO
	g.	Determine that all conditions of the Order/CAL are satisfied.	X		SPO
	h.	Re-review of Generic Restart Checklist complete.	X		SPO
B.5	**RESTART AUTHORIZATION** When the restart review process has reached the point that the issues have been identified, corrected, and reviewed, a restart authorization process is begun. At this point the Restart Panel should think broadly and ask: "Are all actions substantially complete? Have we overlooked any items?"				
	a.	Prepare restart recommendation document and basis for restart.	X		SPO
	b.	NRC Restart Panel recommends restart.	X		SPO
	c.	No restart objections from other applicable HQ offices.	X		SPO
	d.	No restart objections from applicable Federal agencies.	X		SPO
	e.	DSPO concurs in restart recommendation.	X		DSPO
	f.	NRR Director concurs in restart recommendation.	X		DONRR
	g.	EDO concurs in restart recommendation when required.	X		EDO
	h.	Conduct ACRS briefing when requested.	X		SPO
	i.	Conduct Commission briefing when requested.	X		DSPO
	j.	Commission approves restart authorization.	X		COMM
	k.	EDO authorizes restart.	X		EDO

B.6	**RESTART AUTHORIZATION NOTIFICATION** Notify the applicable parties of the restart authorization. Notifications should generally be made using a memorandum or other format consistent with the level of formality required. Communication of planned actions is important at this stage to ensure that NRC intentions are clearly understood.				
	a.	Commission (if the Commission did not concur in the Restart Authorization or as requested).	NA		
	b.	EDO (if the EDO did not concur in the restart recommendation or as requested).	NA		
	c.	Congressional Affairs.	X		OCA
	d.	ACRS (a briefing may be substituted for the written notification if the ACRS requests a briefing).	X		SPO
	e.	Applicable Federal agencies.	X		SPO
	f.	Public Affairs.	X		OPA
	g.	State and local officials.	X		SLO
	h.	Citizens or groups that expressed interest during the restart approval process.	X		SPO
C.1.1	**Root Cause Assessment**				
	a.	Conditions requiring the shutdown are clearly understood.	X		SPO
	b.	Root causes of the conditions requiring the shutdown are clearly understood.	X		SPO
	c.	Root causes of other significant problems are clearly understood.	X		SPO
	d.	Effectiveness of the root cause analysis program.	X		SPO
C.1.2	**Damage Assessment**				
	a.	Damage assessment was thorough and comprehensive.	NA		
	b.	Corrective actions clearly restored systems and equipment or verified they can perform as designed.	NA		
C.1.3	**Corrective Actions**				
	a.	Thoroughness of the corrective action plan.	X		SPO
	b.	Completeness of corrective action programs for specific root causes.	X		SPO
	c.	Control of corrective action item tracking.	X		SPO OSTI
	d.	Effective corrective actions for the conditions requiring the shutdown have been implemented.	X		SPO OSTI
	e.	Effective corrective actions for other significant problems have been implemented.	X		SPO OSTI
	f.	X		SPO OSTI	
	g.	Effectiveness of the corrective action verification process.	X		SPO OSTI
C.1.4	**Self-Assessment Capability** The occurrence of an event may be indicative of potential weaknesses in the licensee's self-assessment capability. A strong self-assessment capability creates an environment where problems are readily identified, prioritized, and tracked. Effective corrective actions require problem root cause identification, solutions to correct the cause, and verification methods that ensure the issue is resolved. Senior licensee management effectiveness in ensuring effective self-assessment is treated separately.				

	a.	Effectiveness of Quality Assurance Program.	X		SPO
	b.	Effectiveness of Industry Experience Review Program.	X		OSTI
	c.	Effectiveness of licensee's Independent Review Groups.	X		SPO OSTI
	d.	Effectiveness of deficiency reporting system.	X		SPO OSTI
	e.	Staff willingness to raise concerns.	X		OE SPO
	f.	Effectiveness of PRA usage.	X		OSTI
	g.	Effectiveness of commitment tracking program.	X		SPO
	h.	Review applicable external audits.	X		OSTI
	i.	Quality of 10 CFR 50.72 and 50.73 reports.	X		SPO
C.2.1	**Management Oversight and Effectiveness**				
	a.	Goals/expectations communicated to the staff.	X		OSTI
	b.	Demonstrated expectation of adherence to procedures.	X		SPO OSTI
	c.	Management involvement in self-assessment and independent self-assessment capability.	X		SPO
	d.	Effectiveness of management review committees.	X		SPO OSTI
	e.	Management's demonstrated awareness of day-to-day operational concerns.	X		SPO OSTI
	f.	Management's ability to identify and prioritize significant issues.	X		SPO OSTI
	g.	Management's ability to coordinate resolution of significant issues.	X		SPO OSTI
	h.	Management's ability to implement effective corrective actions.	X		SPO OSTI
C.2.2	**Management Support**				
	a.	Impact of any management reorganization.	X		SPO
	b.	Effective and timely resolution of employee concerns.	X		SPO
	c.	Adequate engineering support as demonstrated by timely resolution of issues.	X		DRS OSTI
	d.	Adequate plant administrative procedures.	X		SPO
	e.	Effective information exchange with other utilities.	X		SPO OSTI
	f.	Participation in industry groups.	NA		
	g.	Effectiveness of Emergency Response Organization.	X		DRS
	h.	Coordination with offsite emergency planning officials.	X		DRS
C.3.1	**Assessment of Staff**				
	a.	Demonstrated commitment to achieving improved performance.	X		SPO OSTI
	b.	Demonstrated safety consciousness.	X		OSTI SPO

	c.	Understanding of management's expectations and goals.	X		OSTI
	d.	Understanding of plant issues and corrective actions.	X		OSTI SPO
	e.	Qualifications and training of the staff.	X		OSTI
	f.	Staff's fitness for duty.	NA		
	g.	Attentiveness to duty.	X		OSTI
	h.	Level of attention to detail.	X		OSTI
	i.	Off-hour plant staffing.	X		SPO
	j.	Staff overtime usage.	X		SPO
	k.	Procedure usage/adherence.	X		SPO
	l.	Awareness of plant security.	X		DRS
	m.	Understanding of offsite emergency planning issues.	X		DRS
C.3.2	**Assessment of Corporate Support and Site Engineering Support**				
	a.	Corporate staff understanding of plant issues.	X		OSTI
	b.	Corporate staff site-specific knowledge.	X		OSTI
	c.	Effectiveness of the corporate/plant interface meetings.	X		OSTI
	d.	Corporate involvement with plant activities.	X		OSTI
	e.	Effectiveness of site engineering support.	X		DRS SPO
	f.	Effectiveness of the site design modification process.	X		DRS SPO
	g.	Effectiveness of licensing support.	X		SPO
	h.	Coordination with offsite emergency planning officials.	X		SPO
C.3.3	**Operator Issues**				
	a.	Licensed operator staffing meets requirements and licensee goals.	X		OSTI
	b.	Level of formality in the control room.	X		OSTI SPO
	c.	Effectiveness of control room simulator training.	X		DRS
	d.	Control room/plant operator awareness of equipment status.	X		OSTI SPO
	e.	Adequacy of plant operating procedures.	X		SPO
	f.	Procedure usage/adherence.		SPO OSTI	
	g.	Log keeping practices.	X		OSTI
C.4	**ASSESSMENT OF PHYSICAL READINESS OF THE PLANT**				
	a.	Operability of technical specification systems.	X		OSTI
	b.	Operability of required secondary and support systems.	X		OSTI
	c.	Results of pre-startup testing.	X		SPO OSTI
	d.	Adequacy of system lineups.	X		OSTI

	e.	Adequacy of surveillance tests/test program.	X		OSTI
	f.	Significant hardware issues resolved (i.e. damaged equipment, equipment aging, modifications).	X		OSTI
	g.	Adequacy of the power ascension testing program.	X		OSTI SPO
	h.	Effectiveness of the plant maintenance program.	X		OSTI DRS
	i.	Maintenance backlog managed and impact on operation assessed.	X		OSTI
	j.	Adequacy of plant housekeeping and equipment storage.	X		OSTI
C.5	**ASSESSMENT OF COMPLIANCE WITH REGULATORY REQUIREMENTS**				
	a.	Applicable license amendments have been issued.	X		SPO
	b.	Applicable exemptions have been granted.	X		
	c.	Applicable reliefs have been granted.	X		SPO
	d.	Imposed Orders have been modified or rescinded.	X		SPO
	e.	Significant enforcement issues have been resolved.	X		SPO OE
	f.	Allegations have been appropriately addressed.	X		SPO
	g.	10 CFR 2.206 Petitions have been appropriately addressed.	X		SPO
	h.	Atomic Safety and Licensing Board hearings have been completed.	NA		
C.6	**COORDINATION WITH INTERESTED AGENCIES AND PARTIES**				
	a.	Federal Emergency Management Agency.	X		DRS
	b.	Environmental Protection Agency.	X		SPO
	c.	Department of Justice.	X		OE OI
	d.	Department of Labor.	X		OE
	e.	Appropriate State and local officials.	X		SLO
	f.	Appropriate public interest groups.	X		SPO
	g.	Local news media.	X		OPA

ATTACHMENT 2

ICAVP OVERSIGHT PLAN

1.0 Background

A significant number of design and configuration control issues have been identified at the Millstone units as a result of NRC inspections, the licensee's internal reviews, and allegations. On August 12, 1996, the NRC staff held a public meeting with Northeast Nuclear Energy Company (NNECO, licensee)

to discuss the weaknesses in the design and configuration control programs at Millstone. At this meeting, the staff identified the need for independent verification of the licensee's programs for identifying and resolving existing discrepancies between the plant's configuration and its licensing and design bases. During the meeting, the NRC staff informed the licensee of (1) the reasons for requiring an independent verification, (2) the phasing of the licensee's restart corrective actions with the independent verification, and (3) the procedures for conducting and defining the scope of the independent verification program. In response to the staff's concerns, the licensee submitted a letter dated August 13, 1996, in which it committed to obtain an independent contractor to implement an Independent Corrective Action Verification Program (ICAVP) at Millstone Units 1, 2, and 3. It stated that the ICAVP will include (1) an indepth review of selected systems that will address control of the design and design basis since issuance of the operating license for each unit, (2) selection of systems for review based on risk and safety-based criteria similar to those used in implementing the maintenance rule (10 CFR 50.65), (3) development and documentation of an audit plan that will provide assurance that the quality of the results of the licensee's problem identification and corrective action programs for the selected systems are representative of and consistent with those for other systems, (4) procedures and schedules for parallel reporting of findings and recommendations by the ICAVP contractor to both the NRC and the licensee, and (5) procedures for the ICAVP contractor to use in commenting on the licensee's proposed resolution of the findings and recommendations.

The licensee also committed in its August 13, 1996, letter to a scope for the ICAVP review, encompassing modifications to the selected systems since initial licensing, including (1) a review of engineering design and configuration control processes; (2) verification of current plant conditions against design-basis and licensing-basis documentation; (3) verification that design- and licensing-basis requirements are translated into operating, maintenance, and test procedures; (4) verification of system performance through review of specific test records or observation of selected testing of particular systems; and (5) a review of proposed and implemented corrective actions for design deficiencies identified by the licensee.

On August 14, 1996, the NRC issued a confirmatory order requiring completion of an ICAVP before the restart of any Millstone unit. The order directs the licensee to obtain the services of an organization, independent of the licensee and its design contractors, to conduct a multidisciplinary review of Millstone Units 1, 2, and 3. The order states that the review is to provide independent verification that the licensee has identified and resolved existing problems; documented and utilized licensing and design bases; and established programs, processes, and procedures for effective configuration management in the future.

On August 14, 1996, the Director, Office of Nuclear Reactor Regulation (NRR), established a team, headed by a Senior Executive Service manager, that is responsible for overseeing the implementation of the ICAVP. This team has been included in the Special Projects Office (SPO) within NRR. The staff's oversight objectives are to ensure that the review by the ICAVP contractor is independent of the licensee and its design contractors, is performed by qualified individuals, and is comprehensive enough, incorporating appropriate engineering discipline and operational reviews, to provide the NRC with confidence that the licensee has been thorough in identifying and resolving problems for the Millstone units. This activity is one element of NRC's oversight of the licensee's corrective action efforts included in the Millstone Restart Assessment Plan (RAP).

2.0 Objective of the ICAVP

The purpose of the ICAVP, as stated in the confirmatory order, is to confirm that the plant's physical and functional characteristics are in conformance with its licensing and design bases. The ICAVP audit required by the NRC is expected to provide independent verification, beyond the licensee's quality assurance and management oversight, that the licensee has identified and satisfactorily resolved existing nonconformances with the design and licensing bases; documented and utilized the licensing and design bases to resolve nonconformances; and established programs, processes, and procedures for effective configuration management in the future. The licensee's programs include efforts to identify and understand the root causes of the licensing- and design-basis issues that led to NRC issuance of the 10 CFR 50.54(f) letters to NNECO and implementation of corrective actions that will ensure that the licensee will maintain the plant's configuration and compliance with its design and licensing bases. The licensee has indicated that the scope of its corrective programs will include those systems that it has categorized as either Group 1 (safety-related and risk-significant) or Group 2 (safety-related or risk-significant), using criteria developed in carrying out the maintenance rule. The ICAVP audit must provide insights into the effectiveness of the licensee's programs so that the results can be reasonably extrapolated to the structures, systems, and components that were not reviewed in the audit.

NRC activities to ensure effective corrective actions, including oversight of the ICAVP, will provide additional layers of assurance that the licensee's corrective action programs have been effectively implemented. NRC oversight activities will include in-process reviews of the ICAVP contractor's activities, reviews of the ICAVP results, and additional independent reviews of compliance with the licensing bases for several systems.

3.0 Acceptance Criteria

Before the start of the ICAVP audit, the staff needs to establish acceptance criteria, and a process for handling individual findings from the ICAVP contractor. The staff intends to define a "defect" as any condition that results in the plant being outside its current licensing bases. For example, this would include a condition that would be considered an unreviewed safety question in accordance with 10 CFR 50.59. It would also include a condition that would prevent a structure, system, or component from meeting a regulatory requirement applicable to the unit. The significance of any defect identified by either the ICAVP contractor or the NRC will be assessed by the SPO staff.

The licensee's corrective actions in response to the 10 CFR 50.54(f) letters are expected to identify and correct any existing defects before verification is performed by the ICAVP contractor or the NRC staff. Therefore, any defects identified by the ICAVP or the NRC staff, and their significance, will be important factors in the staff's restart recommendation. The ICAVP order included a requirement for the ICAVP contractor to develop procedures for reporting findings to the NRC. Upon notification that the ICAVP contractor has identified potential defect, the NRC will review and validate the issue. This NRC review may include meetings with the ICAVP contractor and the licensee. The NRC will assess the safety significance of any identified defects. Following consultation with senior NRC management, identified defects could result in a decision to suspend the ICAVP, to expand the scope of the ICAVP, or to reperform the ICAVP following additional licensee corrective action.

In addition to a focus on the identification of any defects, the ICAVP contractor and the NRC staff will evaluate all noted deficiencies that do not meet the

definition of a defect (such as a calculation error that does not place the plant outside the licensing bases), to determine if any programmatic trends are evident. The NRC may determine that additional corrective action by the licensee is necessary if the number and significance of the deficiencies indicate that programmatic issues exist.

4.0 Scope of the ICAVP

Before the start of the ICAVP audit, the NRC must approve the ICAVP contractor's audit plan for each unit. Although the licensee will conduct a detailed review of the Group 1 and Group 2 safety-related or risk-significant systems (approximately 80 systems), the staff's expectation is that the ICAVP contractor will perform indepth reviews of four systems. The scope of the ICAVP audit must, however, be developed to provide confidence that the licensee has verified that the facility conforms to its design and licensing bases.

To provide the level of assurance necessary to support a unit restart decision, the staff's expectation is that the contractor will conduct the ICAVP audit in a three-tier process. First, for Unit 3, four systems will be selected to provide a representative sample to test the thoroughness of the licensee's reviews in identifying potential nonconformances with the design and licensing bases. The number of systems selected for Tier 1 evaluations at Units 1 and 2 will be determined as additional information is obtained by the staff. (The selection methodology for these systems is discussed in Section 5.0.) The ICAVP contractor will review all design and operational aspects of these systems, including maintenance, surveillance testing, and training. The contractor will also review the licensee's corrective actions for all previously identified design-related deficiencies for the selected systems, including the deficiencies discovered during the implementation of the licensee's corrective action programs. For example, the ICAVP contractor will review previous design deficiencies identified by the architect/engineer before initial operation that were to be corrected after initial startup. These Tier 1 reviews will encompass the original design for the selected systems and all design changes, both implemented and proposed. The Tier 1 reviews will provide insights into the effectiveness of the licensee's design change processes. For example, the reviews will include an evaluation of the interfaces among the licensee's organizations involved with the design change process, the licensee's knowledge and understanding of the original design considerations and licensing bases that formed the point of departure for plant design changes, and the consistency among the plant's as-built configuration and design-basis records.

The second tier of the ICAVP audit will address other Group 1 and Group 2 systems that have not been reviewed as part of the Tier 1 reviews. These reviews will be more limited in scope than those performed on the Tier 1 systems. The objective of these reviews is to identify and review some critical design characteristics of the systems that are important to ensure that the licensee's corrective actions have resulted in these systems being capable of performing their accident mitigation functions as specified in Chapter 15 of the UFSAR. The ICAVP contractor will provide the NRC, for agency approval, a list of systems and characteristics to be reviewed. This Tier 2 review is not expected to include a review of passive features such as design of piping and pipe supports. (The ICAVP contractor will review these design aspects as part of the Tier 1 system review.) The Tier 2 review will provide additional assurance of the adequacy of the licensee's programs by broadening the scope of the review to include other Group 1 and 2 systems. This review will also ensure that the fundamental functional requirements of the systems have been met.

The third tier of the ICAVP audit will be a review of some of the various processes used by the licensee to change or modify the facility as described in the licensing bases. These processes include, but are not limited to, calculation changes, proposed technical specification changes, modifications, drawing changes, procedure changes, set point change requests, and replacement item evaluations. A sample of changes, randomly selected from among the licensee's design change processes, will be evaluated by the ICAVP contractor. This approach will provide insights into the effectiveness of the various change processes in controlling the plant's configuration. In addition, this approach will confirm that the design change processes, which the licensee highlighted as opportunities to incorrectly change the design bases in its root cause analysis, were adequately reviewed.

If defects are not identified, the three-tier audit by the ICAVP contractor will give the NRC confidence that the facility conforms to its licensing bases and that appropriate configuration control processes are in place to ensure that future operation of the facility will be conducted in accordance with its licensing bases.

5.0 Methodology for Selecting Systems

As discussed previously, the licensee will conduct a detailed review of risk-significant and safety-related systems, through its corrective action programs, to identify and correct existing design- and licensing-basis deficiencies. The licensee has indicated that it plans to review the Group 1 (safety-related and risk-significant) and Group 2 (safety-related or risk-significant) systems, as defined by its criteria used in implementing the maintenance rule. The NRC reviewed the licensee's list of systems within the scope of the maintenance rule during an inspection completed on November 8, 1996, and identified several problems in this list. The staff will again review the licensee's list of systems after the licensee has addressed the inspection findings.

The ICAVP Tier 1 review (vertical slice) for Unit 3 will include reviews of four Group 1 and Group 2 systems to verify the adequacy of the licensee's corrective action programs. The August 14, 1996, order states that the ICAVP audit plan, which the licensee must submit to the NRC before implementation, must describe risk and safety-based criteria for selection of the systems for review.

The staff plans to use the following process to select the specific systems to be evaluated in the Tier 1 reviews for Unit 3. Following NRC staff evaluation of the ICAVP contractor's audit plan, including the contractor's proposed system selection criteria, the staff will select four systems for review by the ICAVP contractor. The staff will consider objective elements in selecting the systems. These elements include risk significance, system characteristics and complexity, previous opportunities for introducing inappropriate changes to the system or design bases, and previous problems with a system. Other elements considered in this step will be the engineering disciplines involved in the system design, and the results from previous reviews by the NRC or an outside party.

Prior to finalizing its selection of four systems the staff will offer the Connecticut Nuclear Energy Advisory Council (NEAC), the opportunity to recommend one or two systems using any method it deems appropriate. The NRC will consider including one or both of the systems recommended by the NEAC. This would address the public concern regarding the potential for the list of systems being predetermined and available to the licensee before the start of the

ICAVP. A similar two-part process is planned for system selections at Units 1 and 2.

6.0 Sample Size

The staff has reviewed the question of system selection in conjunction with sample size to determine how much independent review is necessary to provide reasonable assurance that the licensee has identified existing design- and licensing-basis deficiencies. In its letter of August 13, 1996, the licensee committed to use, for system selection, risk and safety-based criteria similar to those used in implementing the maintenance rule (10 CFR 50.65). The

August 14, 1996, order stated that the licensee must describe the risk and safety-based criteria used for the selection of systems to be reviewed by the ICAVP contractor. The staff will approve the proposed selection criteria as part of its approval of the contractor's audit plan.

The licensee has indicated that, for Unit 3, it intends to perform a detailed design- and licensing-basis review of approximately 80 safety-related or risk-significant systems encompassed by the maintenance rule. The ICAVP contractor will review a subset of these systems to provide additional assurance that the licensee was effective in identifying and correcting nonconformances with the design and licensing basis. The NRC will inspect the results of the ICAVP contractor's reviews and independently review several systems, providing a third level of review.

In its evaluation of the audit plan proposed by the ICAVP contractor, the staff must determine whether the contractor has proposed an audit with a breadth of scope sufficient to examine all principal design disciplines. The staff considered using a statistical approach to quantify a level of assurance that could be achieved by selecting a specific number of systems for the audit. However, as discussed below, the staff has reached the conclusion that a statistical approach is not the most effective and may not be appropriate in determining the number of systems that the ICAVP contractor should review in its audit.

The systems requiring evaluation by the licensee as a function of risk and safety significance are disparate in terms of system size, function, design attributes, number and type of components, and involvement of design disciplines. For example, the population of systems at Unit 3 includes such diverse systems as service water, emergency diesel generator starter, vital 4160 Vac, containment isolation, boron thermal regeneration, and emergency safety features building ventilation. These systems vary from very specific systems (such as the diesel generator starter system) to global systems (such as the vital 4160 Vac). Assuming that the population of systems is essentially identical, a large number of systems would need to be reviewed to achieve a high degree of confidence that defects do not exist in the systems not sampled. For example, assuming that the population of systems is essentially identical, a statistically based sample would require that a minimum of 59 systems be evaluated to have 95 percent assurance that 95 percent of the systems have no defects. From a practical standpoint, the contractor and NRC resources that would be expended for verification of 59 systems would be extraordinary and would not be justified.

The independent design verification program (IDVP) and integrated design inspection (IDI) program, which are the models for the ICAVP, were used to verify that the plant configuration was consistent with the licensing basis for near-term operating license (NTOL) reviews. As a point of reference, the IDVPs, which were conducted by an independent third party, typically reviewed from one to three systems depending on the system's technical attributes and complexity. The IDIs, which were conducted by the NRC staff, typically reviewed only one system. In addition, the safety system functional inspections (SSFIs), which were conducted to assess the operational performance capability of safety systems at operating plants, typically reviewed only one system. In contrast, the scope of the proposed three-tier ICAVP audit is significantly more than that performed for any previous NTOL reviews and SSFIs.

In addition to the vertical-slice review (Tier 1), to provide additional confidence, the staff approach includes ICAVP contractor review of (1) critical design characteristics of safety-related systems necessary to mitigate the consequences of a postulated accident, to provide additional assurance that these systems can perform their specified functions (Tier 2); and (2) a random sample of design changes from each of the licensee's design change processes (Tier 3). This is the three-tier ICAVP audit discussed in Section 5.0. The Tier 1 review will provide insights into the effectiveness of the licensee's implementation of its corrective action programs. The Tier 2 review will provide additional confidence that the systems required for accident mitigation will perform their specified functions. The Tier 3 review will provide additional confidence that nonconformances with the facility's licensing basis have not been introduced through the licensee's design change processes.

7.0 NRC Oversight of ICAVP Activities

The objective of NRC's oversight of the ICAVP is to ensure that the audit conducted by the ICAVP contractor is independent of the licensee and its design contractors, is performed by qualified individuals, and is comprehensive, incorporating appropriate engineering discipline and operational reviews. The NRC's ICAVP oversight will also include an evaluation of systems that are not within the ICAVP contractor's scope. The results of the licensee's corrective action programs, the ICAVP, and NRC's ICAVP oversight activities will be used as one element within the overall Millstone Restart Assessment Plan, to determine if the licensee has been thorough in identifying and resolving problems for the Millstone units.

The NRC's review of the ICAVP will include review of ICAVP implementation, the ICAVP results, the licensee's corrective actions, and independent reviews similiar to the contractor's three-tier audit. The NRC will assess the independence and qualifications of the contractor and individual team members. The staff will interview each member of the ICAVP contractor team to verify that each has the appropriate level of knowledge and experience to conduct the review and to ensure that none of the members has a professional or financial interest in the facility under review. The staff will also review and approve the scope and depth of the ICAVP audit plan and select some of the systems to be reviewed by the ICAVP contractor. The staff will review selected portions of the ICAVP contractor's completed reviews. The NRC will conduct independent vertical-slice reviews of two systems at Unit 3, one within the scope of the ICAVP and one outside the scope, to provide additional assurance regarding the adequacy of the licensee's and ICAVP contractor's reviews. Similar inspections will be used at Units 1 and 2. The staff will also independently review selected critical design characteristics and samples of changes from the licensee's design change processes. The staff will evaluate the final results of the ICAVP audit and assess the licensee's corrective actions. Additional details regarding the NRC's inspection activities are included in the attached inspection plan.

Attachment: ICAVP Oversight Inspection Plan

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[1] Reference to applicable MC 0350 section.

[2] Special Inspection Team findings (IR 96-201) that relate to items on this list are marked with an asterisk (*).