PARSONS POWER

INDEPENDENT CORRECTIVE ACTION VERIFICATION PROGRAM

MILLSTONE UNIT 2

AUDIT PLAN

Revision 4

Prepared By: _____ Date October 5, 1998
Deputy Project Director

Approved By: _____ Date: October 5, 1998
Manager, Company Quality Program

Approved By: _____ Date: October 5, 1998
Project Director

MILLSTONE UNIT 2 AUDIT PLAN

REVISION LOG

Section	Revision No.	Description	Date
All	0	Initial Issue	April 3, 1997
All	1	Incorporation of NRC Comments	June 9, 1997
3, 4, 5	2	Incorporation of NRC Comments	June 27, 1997
3.2, 4, 5	3	Incorporate changes from Tier 1, Tier 2, Tier 3, and Discrepancy Reports Procedure Changes	September 29, 1997
3.2, 4, 5, 7	4	General Update and Incorporation of NRC Comments	October 5, 1998

This list delineates sections of this manual that are currently in effect. The latest changes are indicated by a vertical line in the right hand margin of the affected pages.

MILLSTONE UNIT 2 AUDIT PLAN

LIST OF EFFECTIVE PAGES

Page No.	Revision No.	Page No.	Revision No.
i	4	6-1	1
ii	4	6-2	1
iii	3	6-3	1
iv	4		
		7-1	4
1-1	1		
2-1	1		
3-1	1		
3-2	1		
3-3	1		
3-4	4		
3-5	2		
3-6	1		
4-1	1		
4-2	2		
4-3	1		
4-4	4		
4-5	3		
4-6	2		
4-7	3		
4-8	3		
4-9	2		
4-10	3		
4-11	4		
4-12	3		
4-13	4		
4-14	4		
4-15	4		
4-16	1		
4-17	3		
4-18	3		
4-19	3		
4-20	3		
4-21	4		
4-22	4		
4-23	4		
4-24	3		
4-25	3		
5-1	4		
5-2	1		
5-3	3		

MILLSTONE UNIT 2 ICAVP AUDIT PLAN

TABLE OF CONTENTS

MILLSTONE UNIT 2 ICAVP

EXHIBITS

1.0 INTRODUCTION

The purpose of the Independent Corrective Action Verification Program (ICAVP) is to provide the Nuclear Regulatory Commission (NRC), Northeast Nuclear Energy Company (NNECo), and the public with an independent review to confirm the adequacy of NNECo's efforts to establish that Millstone Nuclear Power Station Unit 2 physical and functional characteristics are in conformance with its licensing and design bases.

On August 14, 1996, the NRC issued a confirmatory order requiring completion of an ICAVP before the restart of any Millstone Unit. The scope of the ICAVP will encompass all documented modifications made to the selected systems since initial licensing and will include:

1. Review of engineering design and configuration control processes,

2. Verification of current, as-modified conditions against design and licensing bases documentation,

3. Verification that the design and licensing bases have been translated into operating procedures, and maintenance and test procedures,

4. Verification of system performance through review of specific test records and/or observation of selected testing,

5. Review of proposed and implemented corrective actions for licensee-identified design deficiencies

The ICAVP Audit Plan will implement the ICAVP contractor portions of the August 14, 1996 Confirmatory Order and the NRC Oversight Plan.

The ICAVP Audit Plan will employ the approach noted below for assessing Millstone Unit 2 effectiveness at identifying and correcting licensing bases deficiencies. The scope of the ICAVP Audit will provide confidence that Millstone Unit 2 conforms to its design and licensing bases through the following audit activities:

- Vertical Slice System Review of selected systems (Tier 1)
- Review of Accident Mitigation Systems (Tier 2)
- Review of various design change processes (Tier 3)
- Regulatory Review

2.0 OBJECTIVES

The objective of the ICAVP, as stated in the August 14, 1996 NRC Confirmatory Order, is to confirm that Millstone Unit 2 physical and functional characteristics are in conformance with its licensing and design bases. The ICAVP audit is expected to provide independent verification, beyond NNECo's quality assurance and management oversight, that NNECo has:

- Identified and satisfactorily resolved existing non-conformances with the design and licensing bases,
- Documented and utilized the licensing and design bases to resolve nonconformances,
- Established programs, processes, and procedures for effective configuration management in the future

NNECo'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 to implement corrective actions to ensure NNECo will maintain the plant's configuration and compliance with its design and licensing bases. NNECo 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 will provide insights into the effectiveness of the Millstone Unit 2 programs so that the results can be reasonably extrapolated to the structures, systems, and components that were not reviewed in the ICAVP audit.

3.0 ORGANIZATION

The Millstone Unit 2 ICAVP Project organization that will implement the ICAVP Audit Plan is shown in Exhibit 3-1. The following project organization responsibilities are discussed in this section.

- Team Member responsibilities
- Technical Advisory Group
- Quality Assurance
- Assignment of Staff
- Location of Work

3.1 TEAM MEMBER RESPONSIBILITIES

The Millstone Unit 2 ICAVP Audit Team is based on key project personnel who will be assisted by a core team of technical specialists and additional support resources as required. Responsibilities of Project Director, Deputy Director, Group Leaders, Core Team personnel and support resources are:

Project Director

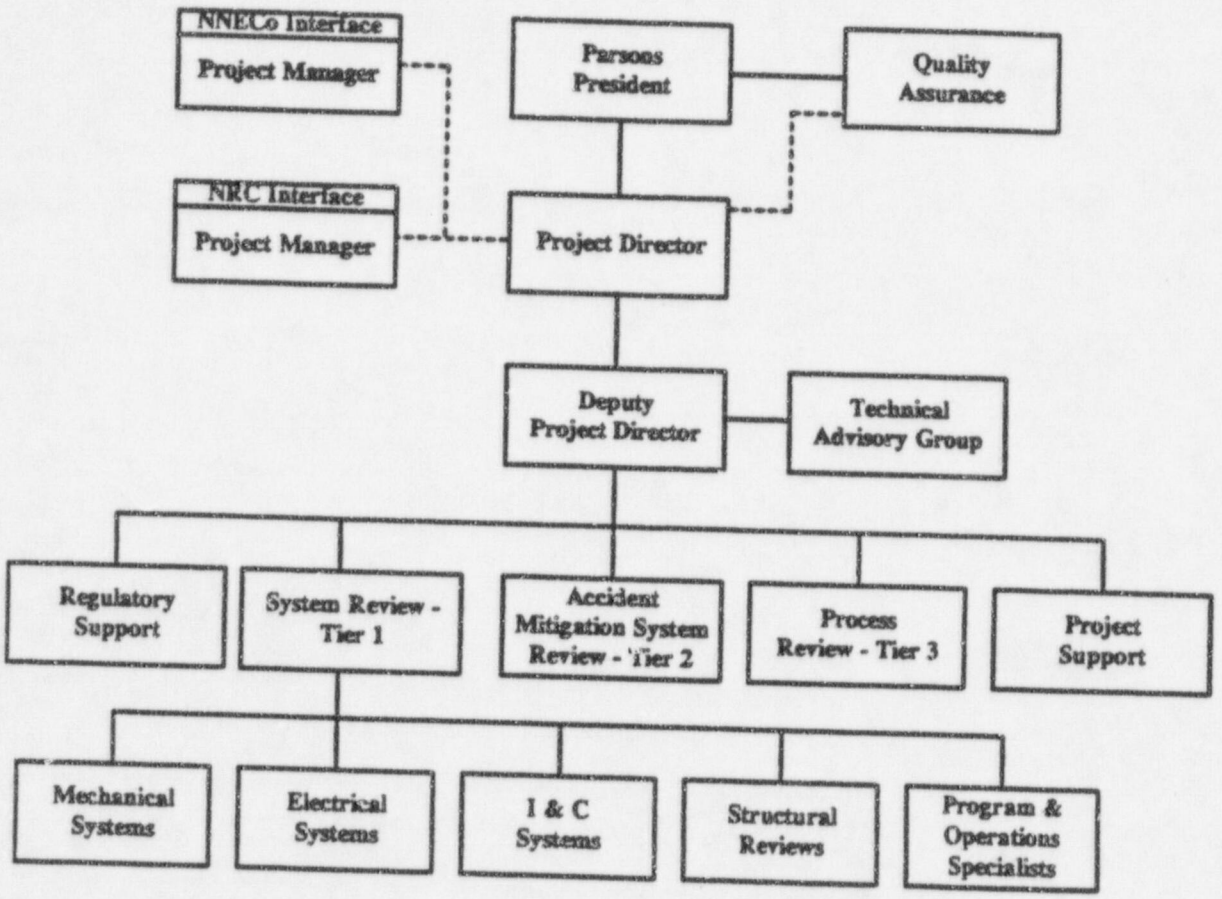
Overall management of the task will be provided by the Parsons Power (Parsons) Project Director. He will be responsible for the task schedule, budget, senior client interface, and compliance to the NNECo contract requirements. He will be the primary interface with NNECo and the NRC.

The NRC and the Connecticut Nuclear Energy Advisory Council (NEAC) have established a memorandum of understanding that permits NEAC to participate and/or observe NRC's oversight activities for the ICAVP. The NRC is responsible for interface and communication with NEAC.

Deputy Project Director

The Deputy Project Director will assist the Project Director in the overall management of the task. He will be responsible for compliance to the ICAVP Audit Plan and the technical adequacy of the final reports.

Exhibit 3-1
MILLSTONE UNIT 2 - ICAVP PROJECT ORGANIZATION



Group Leaders

The Group Leaders will be responsible to the Deputy Project Director for managing their assigned resources to complete the assigned items in their respective project areas. They are responsible for compliance to the ICAVP Audit Plan and the technical adequacy of their deliverables. They will be actively involved in the performance of the work in their respective project areas. Group Leads will be assigned for each of the following project areas:

- System Reviews - Tier 1 (lead assigned for each system reviewed)
- Accident Mitigation System Review - Tier 2
- Process Model and Design Control Review - Tier 3
- Regulatory Support
- Project Support

Core Team Personnel

The Core Team has been selected based upon experience and particular areas of expertise. They are responsible for the performance of the systems audits, regulatory reviews, process review, document review, technical research and the generation of the necessary reports in their respective areas. These personnel work directly for the Group Leaders. The mechanical, structural, civil, electrical and instrumentation engineers have been selected because of their expertise in nuclear plant designs, modifications, assessments and programmatic knowledge. The operations specialists bring specific experience in operations, maintenance, procurement, configuration management and regulatory compliance. Technical specialists in specific areas, e.g., Equipment Qualification, will be utilized on an "as needed" basis across all inspection teams rather than being assigned to only one team.

Support Resources

Support resources work for the Group Lead of Project Support and provide the following support functions for ICAVP activities:

- Scheduling and Project Controls
- Administrative/Clerical
- Information Services
- Document Control
- Technical Editing

3.2 TECHNICAL ADVISORY GROUP

An advisory group of industry experts will assist with ICAVP Audit Plan implementation and other activities as assigned by the ICAVP Project Deputy Director. The ICAVP Deputy Project Director will convene the entire group or selected members of the advisory group based on the activity being performed.

3.2.1 Responsibilities

The Technical Advisory Group (TAG) will have the following responsibilities:

- The TAG provides advice, expert technical opinions and review services to the ICAVP Audit Team.
- The TAG will review the ICAVP Final Report and the individual reports from the various inspections and audits performed by the ICAVP Audit Team(s). Refer to Section 3.2.2 for TAG review of the ICAVP final report.
- The TAG will review and comment on proposed corrective actions for all sampled Significance Level 1, 2 and 3 Discrepancy Reports (DRs).
- The TAG will review all Differing Professional Opinions

3.2.2 Final Conclusions

The TAG will prepare a separate section of the Final Report documenting their observations and opinions.

3.3 QUALITY ASSURANCE

Parsons overall Quality System is described in Parsons Power Quality Management Manual (QMM) which incorporates the principles of Total Quality Management. Quality Assurance (QA) activities shall be performed in accordance with the requirements of the Parsons Power Nuclear Quality Assurance Program, which is documented in Addendum 2 of the Parson's Quality Management Manual (QMM). This program meets the requirements of 10CFR50, Appendix B, and ANSI N45.2. Engineering activities shall be performed in accordance with the programmatic elements of the Company Procedures Manual (CPM) as augmented by Project Procedures and Instructions which implements the requirements of the QMM.

3.3.1 Manager of Company Quality

The Manager of Company Quality (MCQ) has been assigned the responsibility for monitoring effective implementation of the Parsons Power Nuclear Quality Program. The MCQ reports directly to the President of Parsons Power and has the independence, freedom and authority to assess the effectiveness of quality activities and to provide mechanisms to initiate corrective measures when necessary.

The MCQ is assigned to this project and directs all QA Program activities for this Project. The MCQ serves as the primary quality interface between the project and other Parsons Power units which contribute to the QA Program.

The MCQ will routinely review all aspects of the Quality Program accomplishments and status. Evidence of deficiencies in procedures, processes, or systems shall prompt appropriate corrective action.

3.3.2 Internal Audits and Surveillances

The project will be audited through the Corporate Internal QA Audit Program. Audits will be planned, scheduled, coordinated, and performed in accordance with Parsons internal procedures. Audits will be performed by properly trained, experienced, and certified personnel not engaged in the activity being audited.

Surveillances may be performed at any time during the course of the project activities. These surveillances shall follow the guidelines of the ASQC Surveillance Handbook and Guidelines. Surveillances will be performed using applicable elements of internal audit procedures, with the intent to evaluate and improve both performance and process. Surveillances should be in-process evolutions. Personnel trained in auditing techniques will be utilized to perform these surveillances. Copies of internal audit and surveillance reports will be sent to the NRC.

3.4 ASSIGNMENT OF STAFF

All personnel assigned to the project, either Parsons employees or consultants, will be evaluated for their independence from Millstone Unit 2 design and design review activities and their financial independence from Northeast Utilities. All personnel initially assigned to the project may be interviewed by the NRC and other interested parties [i.e., Connecticut Nuclear Energy Advisory Committee (NAEC)]. All personnel additions or substitutions will be processed in accordance with Project

Procedure PP-06, "Substitution or Addition of Personnel". NRC notification is required for all personnel substitutions or additions.

3.5 LOCATION OF WORK

The Millstone Unit 2 ICAVP Project Team will perform the majority of their work in the Parsons Power Reading, Pennsylvania offices. A small field office located near the Millstone Unit 2 site will be maintained to support site walkdowns, conferences, scheduled meetings and document retrieval. Millstone Unit 2 ICAVP Audit Team personnel will visit the field office and Millstone Unit 2 as required to support ICAVP information needs.

4.0 APPROACH TO ICAVP AUDIT

The ICAVP Audit Plan will employ the approach noted in Exhibit 4-1 for assessing Millstone Unit 2 effectiveness at identifying and correcting licensing bases deficiencies. The ICAVP audit is based on the requirements identified in the August 14, 1996 Confirmatory Order and the ICAVP Oversight Plan issued as an attachment to SECY 97-003. The scope of the ICAVP Audit will provide confidence that Millstone Unit 2 conforms to its design and licensing bases through the following multi-tier approach:

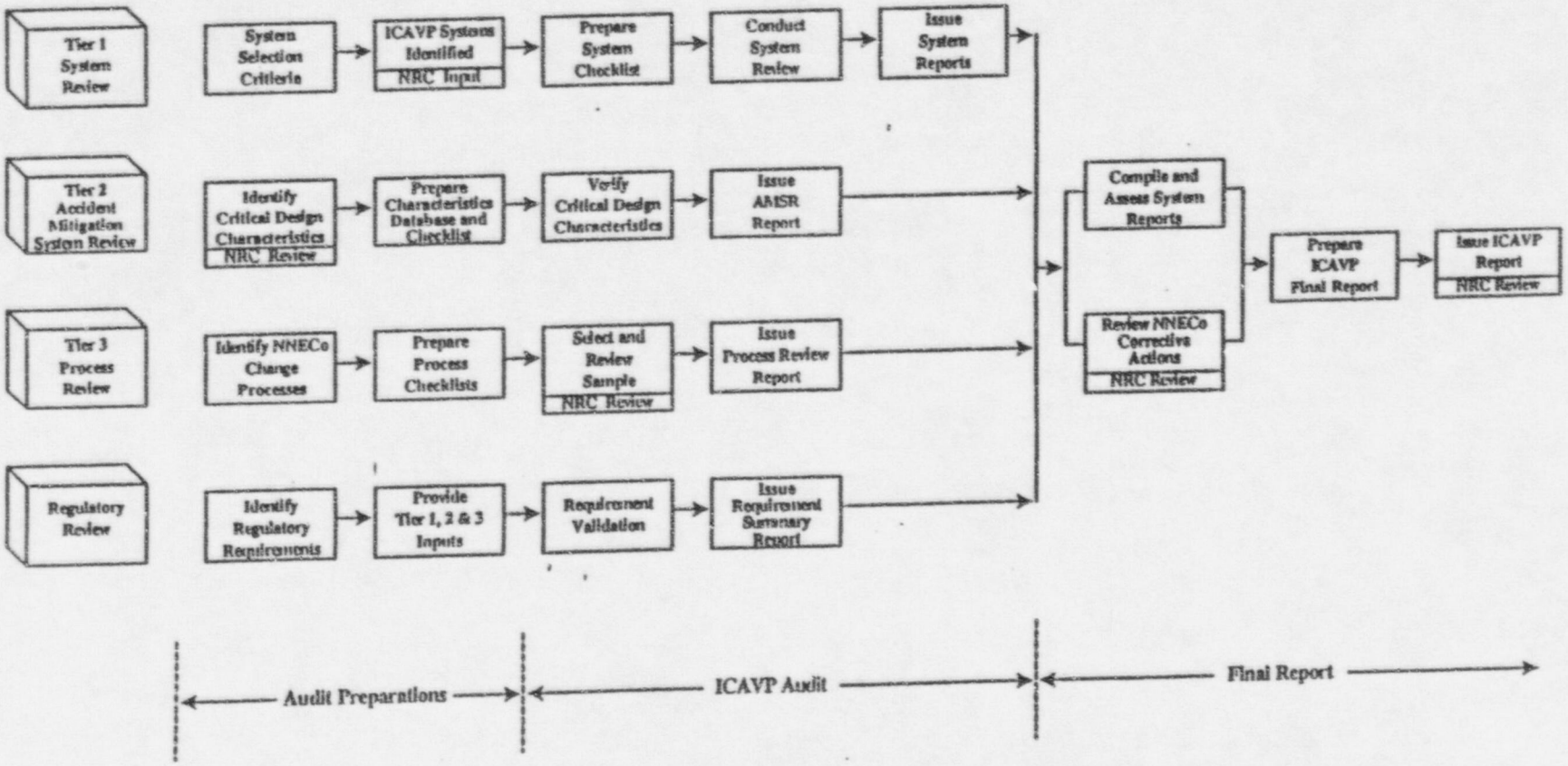
System Vertical Slice Review (SVSR) of selected systems (Tier 1)

The objective of the SVSR inspection (Tier 1 Review) will be to confirm, through an inspection sample of at least 4 systems selected by the NRC, that the Millstone Unit 2's physical and functional characteristics are in conformance with its licensing and design bases, and encompass all modifications made to the selected systems since initial licensing. In addition, the inspection will examine the thoroughness of the Millstone Unit 2's Corrective Action Plan for identifying and resolving nonconformances with the design and licensing bases. The system reviews will be based in part on guidance provided by NRC Inspection Manual Chapter 2535, "Design Verification Programs" and Inspection Procedure 93801, "Safety System Functional Inspection".

Review of Accident Mitigation Systems (Tier 2)

The Tier 2 review will identify and evaluate "Critical Design Characteristics" for Millstone Unit 2 accident mitigation systems. Critical Design Characteristics are identified by reviewing the functional requirements of accident mitigation systems and components to ensure that they can perform their specified safety functions.

Exhibit 4-1
APPROACH TO ICAVP



Review of Various Design Change Processes (Tier 3)

The Tier 3 review will verify the adequacy of the programs currently being implemented by NNECo which are directed at identifying and resolving existing design and configuration management deficiencies associated with past change processes. This will be accomplished by a "horizontal slice" inspection of examples of past changes to the facility design, practices, and documentation

A "going forward" evaluation of the effectiveness of the Millstone Unit 2 configuration management program effectiveness will be addressed by others and is not included in the review.

Regulatory Review

Selected Millstone Unit 2 Regulatory documents will be reviewed and summarized. The summary will key on required licensee actions, a review of the licensee docketed response, and a review of the current Updated Final Safety Analysis Report. Specific items identified will be verified within the System Vertical Slice Review (Tier 1), Accident Mitigation System Review (Tier 2), or Process Review (Tier 3), as appropriate.

4.1 SYSTEM VERTICAL SLICE REVIEW (Tier 1)

The objective of the System Vertical Slice Review (SVSR) inspection of the Independent Corrective Action Verification Program (ICAVP) will be to confirm, through an inspection sample of at least 4 systems, that the Millstone Unit 2's physical and functional characteristics are in conformance with its licensing and design bases, and encompass all documented modifications made to the selected systems since initial licensing. In addition, the inspection will examine the thoroughness of the Millstone Unit 2's Corrective Action Plan for identifying potential nonconformances with the design and licensing bases.

Selected systems will be reviewed in depth, including design bases, impact on design bases by system modifications, safety margins, maintenance, operations, surveillance, training, and corrective actions for previously identified deficiencies. The system reviews will be based in part on guidance provided by NRC Inspection Manual Chapter 2535 "Design Verification Programs" and Inspection Procedure 93801

"Safety System Functional Inspection".

Following system selection by the NRC, the SVSR will be performed as shown in Exhibit 4-2. Project Procedure PP-01 "System Vertical Slice Review" and Project Instruction PI-01 "Conduct of SVSR" will be used to perform the inspection. The SVSR is based on the activities noted below and discussed in the following paragraphs:

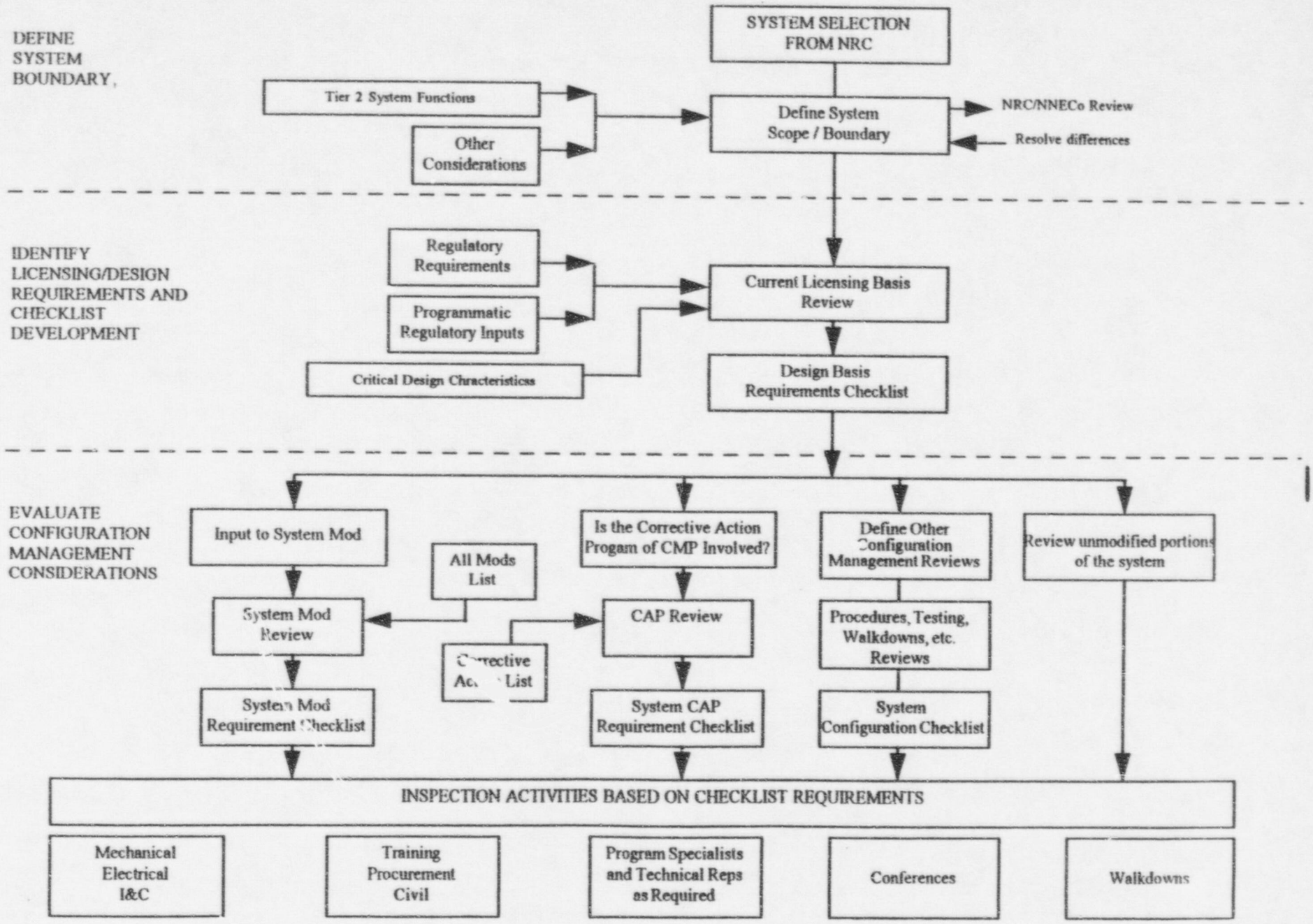
- Select System for SVSR
- Determine System Boundary
- Identify Licensing and Design Basis Requirements
- Prepare System Specific Checklist
- Evaluate System Configuration Management
- Prepare SVSR Final Report

4.1.1 Select Systems for SVSR

Parsons Power Group has developed criteria for NRC use in selecting systems for the vertical slice review. The initial systems to be reviewed will be selected from those systems categorized as Group 1 using criteria developed as part of maintenance rule implementation (10CFR50.65). Systems are categorized as Group 1 based on safety related functions and risk significance.

The Parsons Tier 1 system selection criteria will supplement the Maintenance Rule criteria (risk and safety significance) based system function, operational and configuration history, regulatory history, and professional opinion. A major factor that will be considered will be previous opportunities for introducing inappropriate changes to the system or design bases (a high number of modifications or significant system reconfigurations), and previous problems with the system (at both the plant level and industry wide).

EXHIBIT 4-2
SYSTEM VERTICAL SLICE REVIEW



Parsons will consider a system as a likely candidate for an SVSR if the system:

- Has experienced a high number of modifications.
- Has had a major modification or a number of major modifications involving a design change with internal interfaces between major discipline areas and/or external interfaces with the NSSS vendor, component vendors, and engineering service organizations.
- Has a high level of risk significance based on PRA insights as determined by a panel of individuals familiar with the Plant PRA.
- Has an identified history of deficiencies or operating problems based on plant or industry operating experience.

The NRC should make the final determination of the relative ranking of the systems based on the results of the system selection survey, system boundaries, industry experience, and their own knowledge of the systems and the requirements of the ICAVP. The NRC should bias their weighting for the selection of systems using consideration of issues identified as part of the August 14, 1996 confirmatory order.

Additional detail on system selection criteria is provided in PP-01, System Vertical Slice Review Procedure.

4.1.2 Determine System Boundary

The System Boundary will define the scope of the SVSR in regards to the selected system. Interfaces with, and portions of other systems may be included within the boundary of the selected system to the extent they are necessary to support the functional requirements of the selected system. In additions, system boundaries may be defined at appropriate components that provide physical isolation, as long as the selected boundary does not split the component between systems. The NRC and NNECo will review the system boundary for agreement in interpretation of SVSR scope.

4.1.3 Identify Licensing and Design Basis Requirements

Following system selection and boundary determination, the SVSR Tier 1 Team will review appropriate licensing documentation, including the Updated Final Safety Analysis Report (UFSAR), Technical Specifications, and other regulatory and design documentation and list the Licensing and Design Bases requirements for the system. These requirements will establish the inspection requirements criteria and will be itemized in the inspection system specific checklists.

4.1.4 Prepare System Specific Checklist

The inspection team will review and assess pertinent design and operational aspects of the selected systems, using checklists based on functional system and design engineering considerations. The checklists will be developed specifically for the Millstone Unit 2 system being inspected and will serve to maintain inspection focus and to ensure a complete and thorough review. Sampling plans may be selected for use with repetitive component group evaluations. The sample plan and its rationale will be proposed and submitted to the NRC for their review and oversight.

The checklists, incorporating the input of each inspector and the team leader, will be developed in a team environment to ensure maximizing the expertise of the entire group. They will be developed following the announcement of system selection. The checklists will stipulate inspection conditions for each inspector and will include inspection targets, validation, and verification requirements, and details of the current and original license bases, system history and configuration.

The SVSR Team will use the checklists to guide the inspection process during major inspection activities such as:

- Document and calculation review
- System walkdowns

4.1.5 Evaluate System Configuration Management

The system vertical slice review (SVSR) will entail a comprehensive engineering review of the selected systems by a team of mechanical, electrical, instrumentation & control, maintenance and operations specialists. The team, supported by a staff of regulatory and

nuclear licensing specialists, will employ a broad based but focused examination process of sufficient depth to probe all aspects of the selected systems design, history and configuration.

Emphasis will be on verifying that the subject systems processes, practices and procedures used to perform engineering design, design change control document control and records updating of the design bases have been successful in maintaining the system configuration in accordance with regulatory requirements. Operations, Maintenance, and Test Procedures will be reviewed to verify that correct licensing and design bases information have been incorporated into the procedures.

The SVSR Team will provide ongoing reports which will detail the status, on a system specific basis, of the progress of the SVSR for each of the selected systems. As discrepancies are identified during the review, they will be immediately communicated to management for evaluation. Each discrepancy will be provided with a complete description, including all pertinent information per the requirements of Project Procedure PP-07 ""Discrepancy Reports."

A size of at least 4 systems for the SVSR is predicated on the assumption that the assessment will not find significant discrepancies. Additional systems may be added to the SVSR as directed by NRC.

Evaluation of configuration management considerations will be focused on licensing and design bases requirements. Evaluations will utilize appropriate level documentation (drawings, calculations, design documents, etc.) to the inspection detail necessary to verify and validate conformation to requirements. The vertical slice reviews will emphasize design control and will verify that:

- The current configuration accurately reflects the licensing-bases, including the updated FSAR.
- Calculations and analyses were performed using recognized and acceptable analytical methods and that assumptions made in calculations or analysis supporting changes are technically sound.
- The results of calculations or analysis supporting the unmodified portions of the original configuration and design changes are reasonable (based on engineering judgment) for the scope of the change.

- Millstone Unit 2 considered the effect of a change on design margins and that the design changes received the appropriate level of engineering and management review during the design phase and prior to implementation.

- Millstone Unit 2 considered the effect of a change on pre-operational, startup or system baseline acceptance test results.

- Design changes are accurately reflected in operating, maintenance, and test procedures, as well as in training materials.

- Proposed design changes, subsequently canceled, were not replaced by procedural changes that imposed excessive burdens on plant operators.

- Adequate control of operational procedures, maintenance procedures, test and surveillance procedures, operator training and control of the plant simulator configuration.

- The current configuration is consistent with the licensing bases at the level of detail contained in piping and instrumentation diagrams (P&IDs) or system flow diagrams, piping isometric drawings, electrical single-line diagrams, and emergency, abnormal and normal operating procedures.

- The analyzed configuration is consistent with the current plant configuration.

- Identification numbers are as indicated on the P&ID or process flow diagram, and equipment name plate data is consistent with design specifications and analyses.

- The location of pipe supports, snubbers, and other pipe restraints is consistent with design specifications and piping stress analyses.

- Divisional separation of safety-related systems, structures and components, seismic II/I, and other topics addressed by the licensee's hazards analyses are reflected in the current plant configuration.

4.1.6 Prepare SVSR Final Report

A SVSR Final Report will be developed for each system reviewed by the SVSR Team. The Final Report will summarize the results of each system reviewed and will contain the details of all associated discrepancy reports. Included in the report will be an assessment of the Millstone Unit 2 licensing/design basis and adequacy of the configuration management program. The system final report will consist of, as a minimum, the sections noted below. The SVSR Final Report will be included in the overall ICAVP Report.

- Summary
- System Description & Boundaries
- Licensing and Design Basis Requirements Review
- Configuration Management Review
- Discrepancy Report Summary
- Appendices

4.2 ACCIDENT MITIGATION SYSTEMS REVIEW (Tier 2)

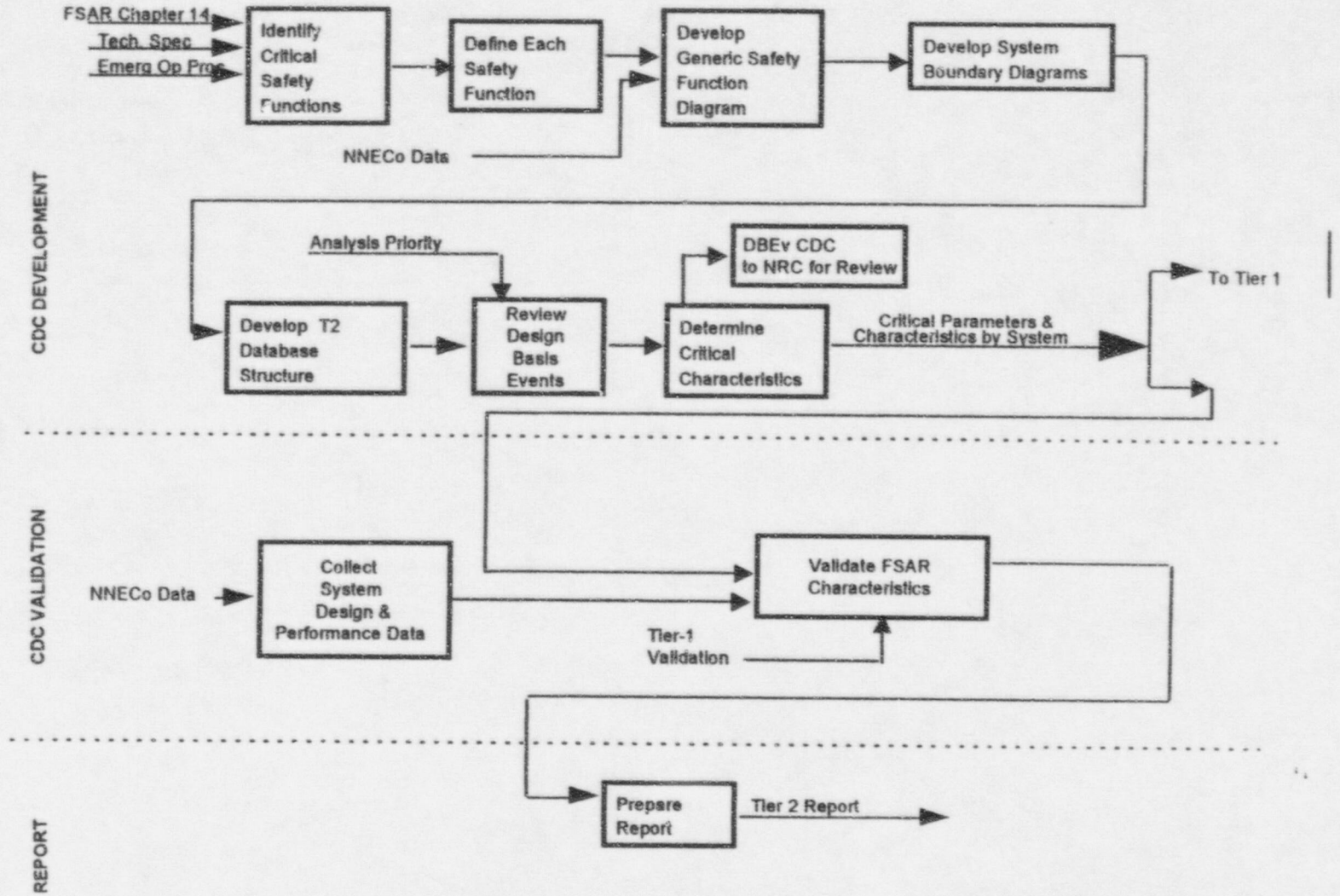
The Tier-2 portion of the ICAVP will identify and verify the "Critical Design Characteristics" for the Millstone Unit 2 Plant as defined by reviewing accident mitigation systems requirements, and assessing critical design characteristics for systems and components to ensure that they can perform their specified safety functions.

Each characteristic will be identified from calculations, analyses and other documentary evidence that supports the Chapter 14 Analysis in the updated FSAR. The review will be based in part on guidance drawn from Appendix E of NUREG-1397 "An Assessment of Design Control Practices and Design Reconstitution Programs in the Nuclear Industry."

Assessment of the critical design characteristics for the accident mitigation systems will be performed in accordance with Project Procedure PP-02 "Accident Mitigation System Review." Exhibit 4-3 presents a summary of the review process. The accident mitigation systems review (AMSR) consists of the following major activities:

- Identification of Critical Design Characteristics
- Preparation of Composite Characteristics Database
- Validation of Critical Design Characteristics
- Preparation of AMSR report

Exhibit 4-3
AMSR Review Process



4.2.1 Identify Critical Design Characteristics

In order to determine critical design characteristics, it is necessary to determine the critical functions that must be performed. A critical function is the set of actions, as a whole, that must take place in order to prevent or mitigate the effects of a Design Bases Events (DBEv), or reduce the consequences of an accident.

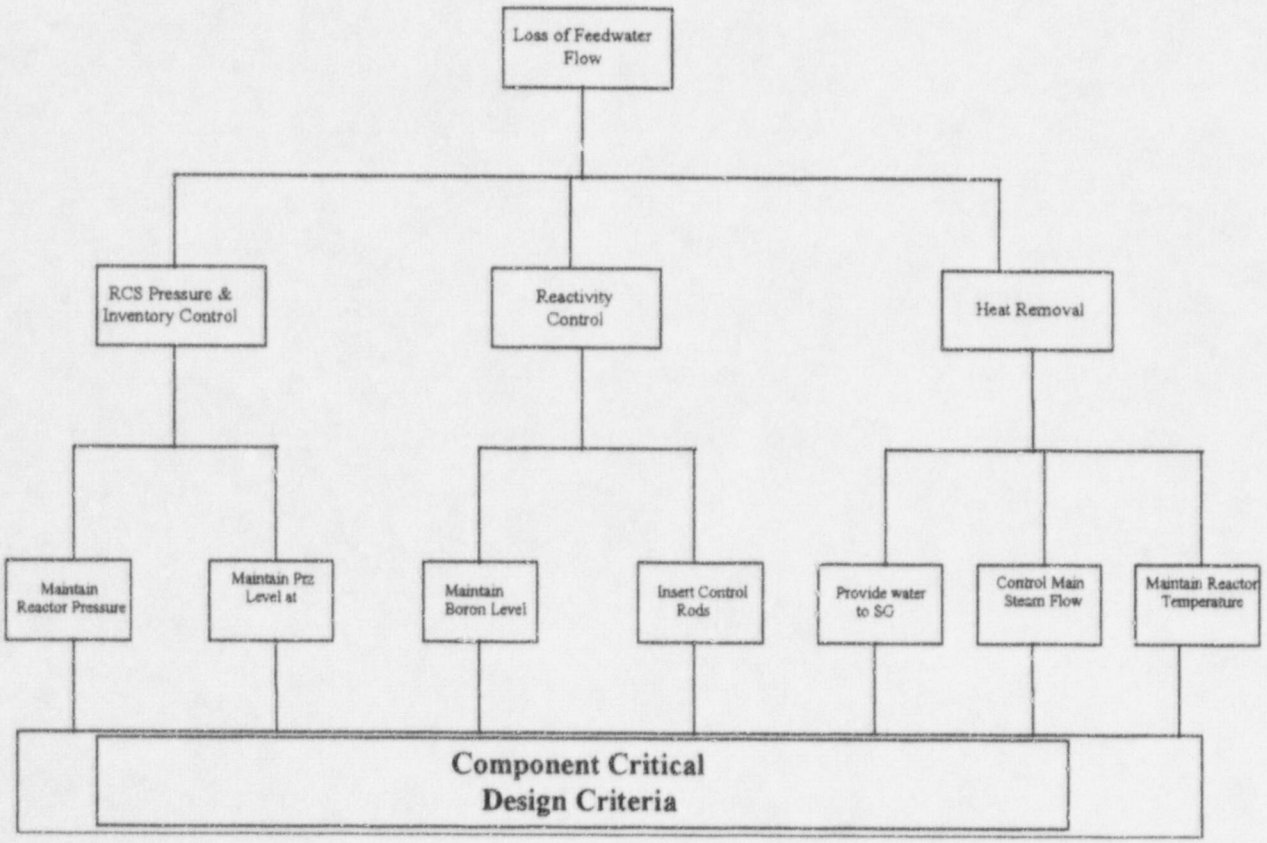
Chapter 14 of the updated Final Safety Analysis Report (FSAR) is the description of all credible accidents that will be addressed. The FSAR (updated) has been selected as the license Design Basis benchmark source, or that point where all changes that affect the ability of the plant to meet the critical function should have been captured. Based on this review, the DBEv are identified as:

- Increase in Heat Removal by the Secondary System
- Decrease in Heat Removal by the Secondary System
- Decrease in Reactor Coolant System Flow
- Reactivity and Power Distribution Anomalies
- Decrease in Reactor Coolant Inventory
- Radioactive Release from a Subsystem or Component
- Non-Standard Review Plan Events

Each DBEv requires a specific set of activities to occur for different plant configurations in order to ensure that the plant is returned to and maintained in a safe condition. These activities are called "Critical Functions". Each of the Critical Functions will be developed to determine the critical actions between the different systems within the plant to ensure that all of the critical interfaces have been identified. For example, if the Critical Function is reactor core cooling, then there will be critical actions necessary in the delivery system to the reactor, the source of the water, the motive power for delivery, the source of the motive power, and the initiating controls.

A generic critical function diagram will be developed presenting the active functions that must be executed for the spectrum of DBEv along with the identified component configuration. An example of a critical function diagram is shown in Exhibit 4-4. This set of conditions will ensure the development of a complete set of Critical Design Characteristics.

Exhibit 4-4
CRITICAL SAFETY FUNCTION DIAGRAM



4.2.2 Prepare Characteristics Database

A critical design characteristic is defined as that aspect of a component or system that must be included in the design to ensure that the component or system will perform its critical safety function. The critical design characteristics are an accumulation of the system design characteristics, and the system's components critical characteristics, coupled with the plant and component configuration at the time of the DBEv. These characteristics will be determined based on the existing information contained in the licensing basis for Millstone Unit 2. The data will be used to perform the systems validation.

The following list represents a core group of documents that contain a significant amount of information about the critical parameters for the plant:

- Updated FSAR for Millstone Unit 2 and Supporting Accident Analyses
- Technical Specifications for Millstone Unit 2
- System Design Bases Documents
- Probabilistic Risk Assessment for Millstone Unit 2
- Combustion Engineering Owners Group Documents
- System Design Calculations

The review of applicable documents will;

1) confirm continuity across the documents,

2) determine the root document that defines the critical parameter or function,

3) ensure that the accident mitigation systems critical design characteristics have been captured for each accident;

4) confirm assumptions made in calculation are in place in the field; and,

5) Ensure results from calculations are appropriate and reasonable.

The Team will review the DBEv and derive the critical safety functions, critical characteristics and critical parameters. In addition, the team will review the accident mitigation systems to identify the critical design parameters and characteristics that have been incorporated. Differences between the two sets of data will be evaluated and compared

against the results from the NNECo corrective action programs. As discrepancies are identified during the review they will be reported per the requirements of Project Procedure PP--07 "Discrepancy Reports".

A listing of the critical design characteristics will be prepared. This listing of critical design characteristics will be the source data base to be used by the Review Team for the systems that will be covered in the SVSR and AMSR process.

4.2.3 Validation of Critical Design Characteristics

The AMSR will include a validation of 100% of the functional/system level critical characteristics derived from FSAR chapter 14 and supporting analyses. This validation will be based on review of plant test data, Technical Specifications, calculations, or other plant configuration documents such as drawings, calculations, etc. that reflect the current documented plant configuration as appropriate. The Emergency Operating Procedure (EOP) will be reviewed to determine consistency with the functional and system level critical characteristics. All discrepancies will be documented.

Review of the characteristics associated with the systems being reviewed by the SVSR Team will be coordinated with the SVSR team. The results of SVSR Team validation will be incorporated into the AMSR report for completeness.

4.2.4 Preparation of AMSR Report

A final report will be prepared identifying the critical design characteristics by DBEv. Included in the report will be the listing of the characteristic and how it was validated. The AMSR Report will be included as part of the ICAVP Final Report, and will contain the following:

- Summary
- Critical Safety Function by DBEv
- Critical Design Characteristics by DBEv
- Discrepancy Reports summary

4.3 PROCESS REVIEW (Tier 3)

In accordance with NRC direction, a review to determine whether Millstone Unit 2 processes and procedures have been established for effective configuration management on a going-forward basis will be addressed by others and is not included in this review.

The Tier 3 (Process Review) portion of the audit will verify the adequacy of the Millstone Unit 2 CMP to identify and correct design and configuration management deficiencies associated with past change processes. The Tier 3 process review is not an evaluation of change procedures used in the past but rather a review to determine the effectiveness of the Millstone Unit 2 CMP to identify and correct deficiencies that may have resulted from the ineffectiveness of past change processes. This will be accomplished by a "horizontal slice" inspection of examples of past changes to the facility design, practices, and documentation. The horizontal slice program verification cuts across plant systems and is a technical review to determine if:

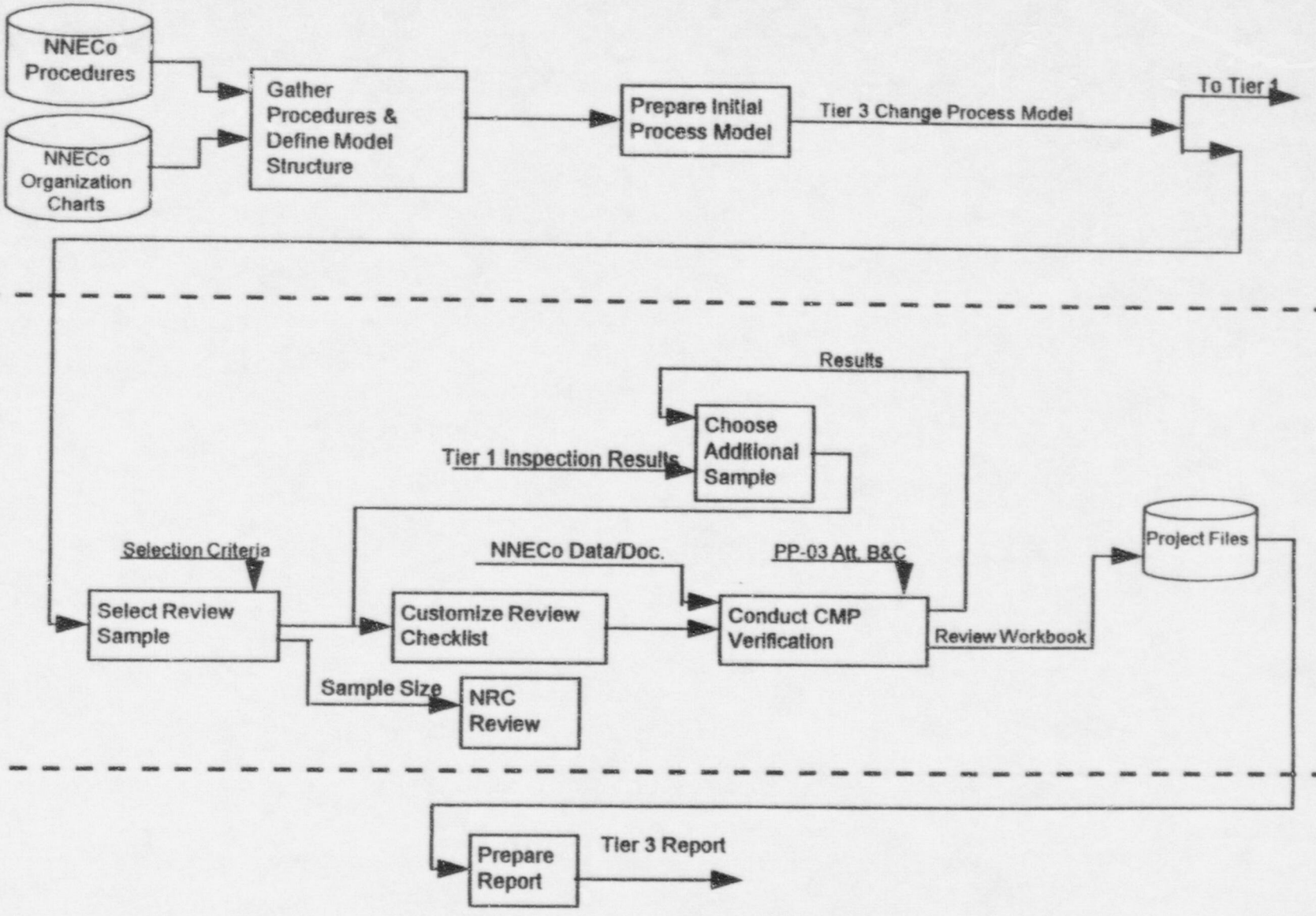
- Changes to the plant meet the current design and licensing basis documentation,
- Design and licensing basis requirements have been translated into operating, maintenance and testing procedures,
- The performance of systems/components has been verified through testing,
- design and plant information contained in databases and documents are accurate and consistent with the plant, and
- CMP corrective actions, associated with the examples of past changes selected for review, have adequately corrected the deficiency.

Exhibit 4-5 illustrates the Process Review steps. The Process Review of Millstone Unit 2 processes and procedures will be performed in accordance with Project Procedure PP-03 "CMP Performance Horizontal Slice Review". Conduct of the review is based on the activities noted below and discussed in the following sections.

- Identify Change Processes
- CMP Horizontal Slice Review
- Report

Tier 3 Process Summary

Exhibit 4-5



4.3.1 Identify Change Processes

In preparation for performing the process review and the System Vertical Slice Review, NNECo procedures will be reviewed and a process model prepared to identify how various changes are performed and controlled, the organizations involved, titles of various documents, and where documents and information can be found. This is done to efficiently and consistently familiarize the ICAVP team members with what they will be reviewing and the organizations and kinds documents they will need to consider.

The process model will contain various change processes based on a review of current procedures. The model will be a high level depiction of how changes to facility design or plant characteristics are accomplished and controlled. To prepare for development of the process model, the ICAVP Team will review procedures in the following areas:

- Change Control – Plant Equipment/Structures
- Change Control - Design, License, Procedure Documents, Database Information
- Assessment and Equipment Monitoring

The current change processes will be identified using a 4-dimensional process model. Since a work process consists of activities performed by people and tools to produce products and information meeting customer, management, and regulatory requirements, the process modeling will capture and communicate these aspects of how work is accomplished:

The process model will be a high level depiction of:

- general activities that are performed,
- the controls on the activities,
- the information and documents produced,
- the source and repository of the information/documents, and
- the organizations that perform or support the change activities.

4.3.2 CMP Horizontal Slice Review

A review will be performed on a sample of past change documentation and the resulting plant configuration, maintenance, operations, testing, or training changes. The review will look for:

- Unrecognized modifications to the plant, design documents or information.
- Departures from the plant licensing or design basis documents
- Acceptable documentation of the results of the change and its basis.

This review is not an evaluation of change procedures used in the past, but rather a review to determine the effectiveness of the Millstone Unit 2 CMP to identify and correct design or licensing basis deficiencies that may have resulted from the ineffectiveness of past change processes. This is a "out-come" based comparison of the current conditions versus the current design and licensing basis.

To accomplish the objective of the Tier 3 inspection, specific inspection areas have been identified for review as noted below:

ENGINEERING

1) Setpoint changes
2) Specification Revision (not associated with a modification)
3) Drawing Revisions (not associated with a modification)
4) Calculations Revisions (not associated with a modification)
5) Licensing Document Changes
6) Non-Conformance Report (use as is)
7) Engineering Work Request
8) Vendor Technical Information Updates

PARTS PROCUREMENT/SUPPLY

1) Commercial Grade Dedication
2) Equivalency Substitution
3) Master Equipment Parts List (MEPL)

OPERATIONS & MAINTENANCE

1) Revisions to Operations & Maintenance Procedures
2) ISI/IST, ASME Section XI Repair and Replacement
3) Temporary Changes, including jumper, lifted lead, and bypass control
4) Emergency changes

The sample will be over and above what may be reviewed by the System Vertical Slice Review. The sample of work products or outputs will be chosen to provide, as appropriate, a cross section of attributes such as discipline, (mechanical, electrical, I&C, etc.), time frame in which the product was produced, and other characteristics which have been found by experience to be potential weakness,(e.g. numerous organizational interfaces, or past industry problems). Sample size and its rational will be proposed and submitted to the NRC for review and oversight. Sampling and reviews will be conducted in two phases to ensure all CMP systems have been considered.

The methodology, documentation requirements, depth of review, walkdown inspections, etc. for this program verification review is similar to what is described in the System Vertical Slice Review procedures except this review is focused on change processes instead of systems.

4.3.2.1 Prepare Review Checklist

Review checklists will be developed specifically for the inspection areas identified above. The checklists will serve to maintain inspection focus and to ensure a complete and thorough review.

The checklists, incorporating the input of each inspector and the team leader, will be developed in a team environment to ensure maximizing the expertise of the entire group. The checklists will identify programmatic evaluation criteria for each of the inspection areas and will utilize the SVSR implementation checklist/workbook and professional experience for specific technical review criteria.

4.3.2.2 Conduct the Review

The review will entail a comprehensive engineering review of the above inspection areas by a team of mechanical, electrical, instrumentation & control, maintenance, operations, document control, configuration management, and information management specialists. The team, using the inspection area checklist will review the selected sample of change process outputs, confirm database accuracy and consistency, and perform plant walk downs.

If discrepancies are identified during the review, they will be immediately communicated to management for evaluation. Each discrepancy will be provided with a complete description, including all pertinent information per the requirements of Project Procedure PP-07 "Discrepancy Reports". Based on discrepancies identified during this review and the SVSR review, additional samples may be chosen by the NRC to investigate the extent of potential problems, or to ensure that a individual discrepancy is an isolated incident.

4.3.4 Review Activity Report

A process review report will be developed for the Tier 3 inspection areas. The final report will summarize the results of each process review area and any associated discrepancy reports. Included in the report will be an assessment of the effectiveness of the Millstone Unit 2 CMP to identify and correct design and configuration management deficiencies associated with past change processes. The process review report will consist of the sections noted below. The process review report results will be included in the final ICAVP report.

The report will include:

- Summary
- Review method and the sample selected for the various inspection areas
- Summary of results by inspection area
- Corrective actions review results
- Discrepancy Reports summary and Appendices

4.4 REGULATORY REVIEW

As part of the Millstone Unit 2 ICAVP, a Regulatory Review will be performed of selected licensing documents that have been docketed for Millstone Unit 2. (Docket 50-336). The Regulatory Review will include commitment identification for verification during the System Vertical Slice Review (Tier 1). The Regulatory Review will provide additional insight into NNECo's compliance with the current licensing and design bases at Millstone Unit 2.

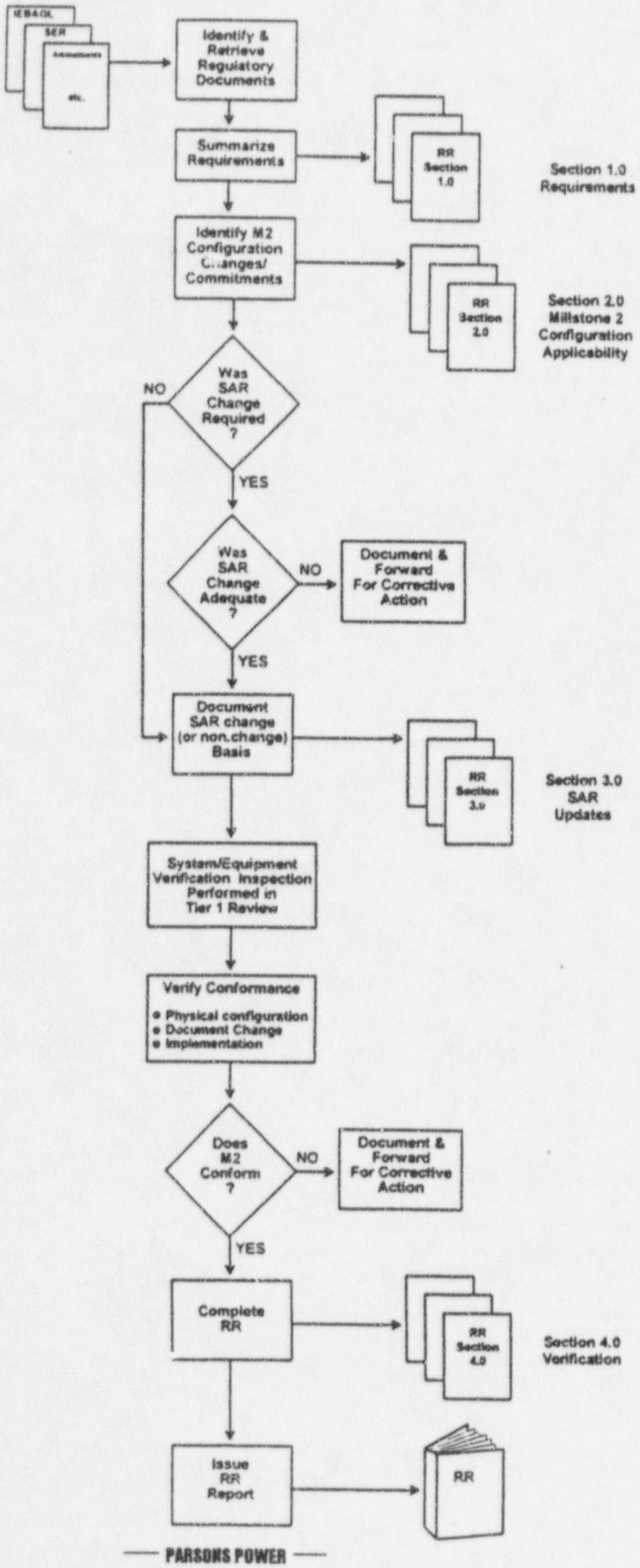
The Regulatory Review, depicted on Figure 4.6, will be performed in accordance with Project Procedure PP-04 "Regulatory Review" The Regulatory Review consists of the following main activities:

- Identification of regulatory requirements, Millstone Unit 2 applicability and specific commitments identified on the docket for items within the scope of Tier 1 (the scope of Tier 1 is limited to the systems selected by the NRC for Tier 1 review).

- Verification of commitments and requirements validation (applicable items).

- Preparation of a Summary Report of Regulatory Review

Exhibit 4-G
REGULATORY REVIEW



PARSONS POWER

4.4.1 Identification of Applicable Regulatory Requirements, and Related Commitments

Specific regulatory documents will be included in the Regulatory Review if they are applicable to Millstone Unit 2 and within the scope of the ICAVP. These include:

- NRC Bulletins
- NRC Generic Letters
- Safety Evaluation Reports associated with License Amendments
- Other Safety Evaluation Reports (not associated with License Amendments)
- Millstone Unit 2 Licensee Event Reports

All documents in each of these categories will be screened for applicability Documents relating to certain programmatic areas such as security, fire protection, environmental qualification, emergency response and planning and quality assurance will not be reviewed as part of the Regulatory Review. Specialists will be employed to review pertinent aspects of these programmatic areas to support detailed Tier reviews.. Additional details of the screening process are provided in Project Procedure PP-04, "Regulatory Review."

Each applicable document will be summarized. The summary will key on required licensee action. In addition, the licensee's docketed response or application as applicable will be reviewed and summarized. This summary of the response will focus on the licensee's commitments.

For each applicable document, a review of the current Updated Final Safety Analysis Report will be performed to determine if an FSAR change was required, and if required, whether the FSAR was updated as required by 10 CFR 50.71.

4.4.2 Commitment/Requirement Verification

Specific commitments identified during the Regulatory Review will be verified during the Millstone Unit 2 ICAVP. The verification will be performed within the System Vertical Slice Reviews (Tier 1). Summary and conclusions of the verification efforts will be provided in the Regulatory Review Report.

4.4.3 Prepare Summary Report of Regulatory Review

A report will be prepared summarizing the results of the Regulatory Review performed as part of the Millstone Unit 2 ICAVP. A summary will be provided for each set of documents listed in Section 4.4.1 included in the Regulatory Review. In addition, each of the completed Regulatory Review Summary Forms within the scope of the Tier reviews will be provided.

4.5 ICAVP ACCEPTANCE CRITERIA

Due to the complexity of the reviews conducted by the ICAVP and the wide breadth in scope and potential severity of deficiencies than may be identified by the ICAVP; criteria can not be established that would fairly and adequately address all possible outcomes. The Parsons ICAVP Team will report all identified discrepancies to the NRC for evaluation. The discrepancy reporting process will also provide a brief description of the safety significance of each discrepancy. The NRC will evaluate ICAVP discrepancies both individually and collectively and take appropriate action.

The Pasons ICAVP Team will prepare a final report as well as individual reports for each inspection tier when completed. Each of these reports will include a collective evaluation of discrepancies. The evaluation will assess consistency of design/licensing basis, adequacy of configuration control, and acceptability of NNECo corrective actions.

4.6 PROJECT PROCEDURES & INSTRUCTIONS

Project Procedures noted in Exhibit 4-7 and Parsons Power's Quality Program will be used to support implementation of this Audit Plan. Project procedures are required for major project audit activities (i.e., SVSR, Accident Mitigation System Review, Process Review, and Regulatory Review) and implementation of Audit Plan Requirements. Project Instructions are developed as required to supplement or provide clarifications for Project Procedures associated with major project inspection activities.

Exhibit 4-7
PROJECT PROCEDURES & INSTRUCTIONS

PROJECT PROCEDURE	TITLE
PP-01	System Vertical Slice Review
PP-02	Accident Mitigation Systems Review
PP-03	Process Review, CMP Horizontal Slice
PP-04	Regulatory Review
PP-05	Differing Professional Opinion
PP-06	Substitution or Addition of Personnel
PP-07	Discrepancy Reports

PROJECT INSTRUCTION	TITLE
PI-01	SVSR Implementation Checklists and Workbook

5.0 DISCREPANCY REPORTS

During the course of the Millstone Unit 2 ICAVP, any Team member may identify an apparent discrepancy and originate a Discrepancy Report (DR) in accordance with Project Procedure PP-07. A discrepancy is a condition, such as an error, omission, or oversight which prevents consistence among the physical configuration, information sources (e.g. documentation and data bases, design basis and/or regulatory requirements. The process for evaluation of Discrepancy Reports is presented in Exhibit 5-1.

5.1 IDENTIFICATION, EVALUATION AND REPORTING OF DISCREPANCIES

All DRs will be evaluated by the responsible Group Lead, based on discussion with the Originator and other Team Members, as appropriate, to determine if its basis is valid and to ensure that all known aspects of the Discrepancy are adequately described on the DR.

If the basis for the DR is determined not to be valid, the responsible Group Lead may close the DR. DRs for issues that are evaluated and found to have been identified previously by NNECo as part of their Configuration Management Plan shall be noted as such and closed following such evaluation.

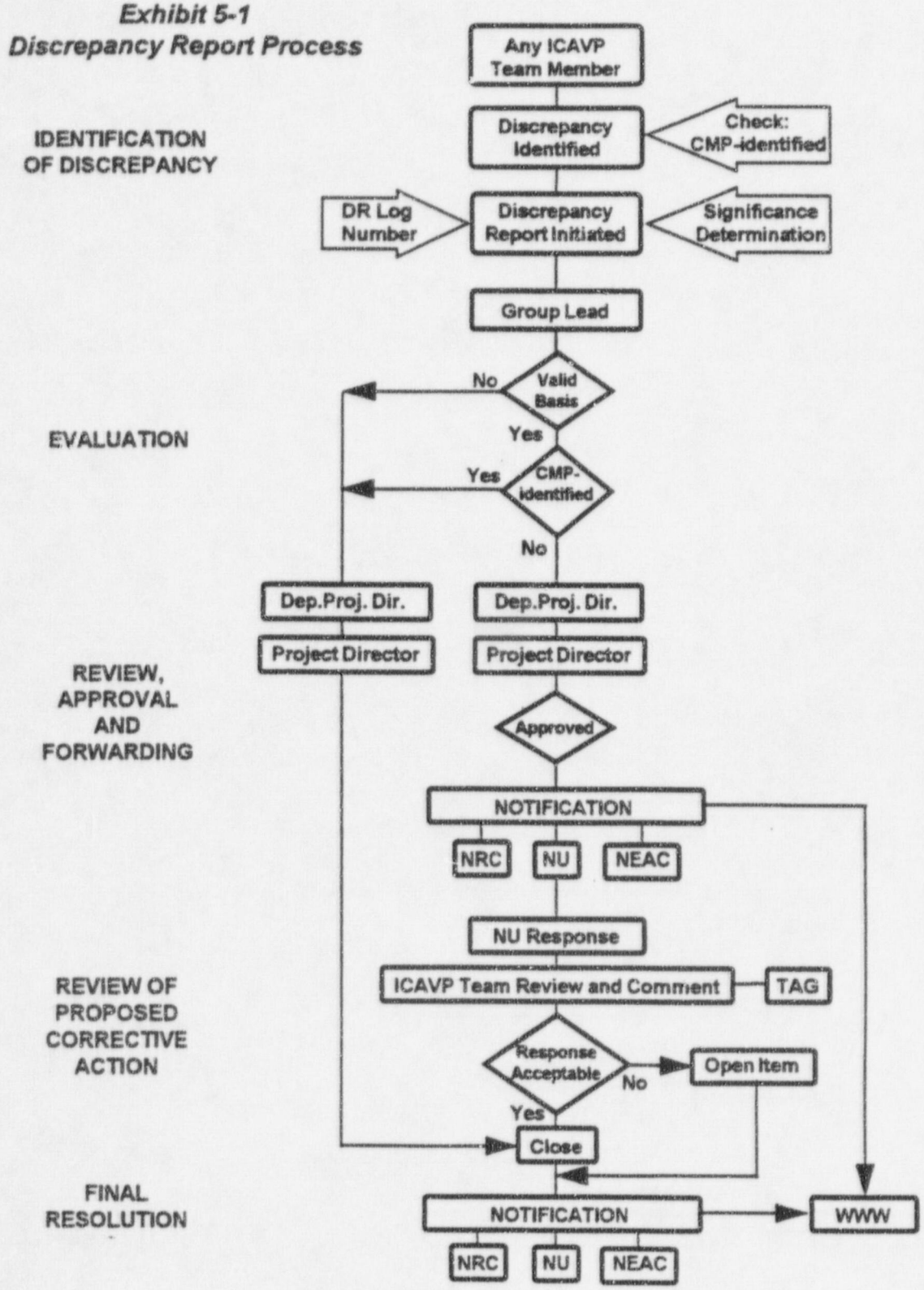
After a DR has been evaluated by the responsible Group Lead, and reviewed by the Deputy Project Director, it will be forwarded to the Project Director for approval. After approval, the DR will be reported concurrently to the NRC, NEAC and NNECo in accordance with the Communications Plan (PLN-02). DRs will be posted on the Parsons World Wide Web page 48 hours (2 working days) after reporting to NNECo, NEAC and the NRC. This includes DRs that were closed following a determination that the basis was not valid and for issues that are evaluated and found to have been identified previously by NNECo as part of their Configuration Management Plan.

5.2 REVIEW OF PROPOSED RESPONSE TO DISCREPANCIES

Proposed corrective action by NNECo in response to a DR will be forwarded to the ICAVP Group Leader responsible for validating the DR. The ICAVP Group Leader will prepare comments on the proposed corrective action. Once comments on the proposed resolution have been approved they are forwarded to the NRC, NNECo and NEAC. A

summary of proposed NNECo resolutions and Parsons comments will be reported on the Parsons World Wide Web in accordance with the Communications Plan (PLN-02).

Exhibit 5-1
Discrepancy Report Process



6.0 ICAVP FINAL REPORT

Preparation of the ICAVP Final Report will complete project activities and include the following:

- Compile and assess system reports
- Review of NNECo corrective actions
- Prepare the ICAVP Final Report
- Issue the ICAVP Final Report

6.1 COMPILE AND ASSESS SYSTEM REPORTS

System/Process reports developed during the ICAVP Audit will be compiled and assessed prior to their incorporation into the ICAVP Final Report. After the ICAVP system reports have been compiled, the lead engineers will evaluate the results based on guidance and objectives contained in NRC Inspection Manual Section 2535, "Design Verification Programs". The entire "system story" including discrepancies identified and corrective actions taken will be evaluated to:

- Verify that the corrective action programs on selected systems are representative of and consistent with those of other systems.
- Measure the effectiveness of the NNECo Configuration Management Program (CMP) to identify problems, resolve existing problems, and preclude repetition.

6.2 REVIEW OF NNECo CORRECTIVE ACTIONS

A sample of NNECo corrective actions associated with the NNECo configuration management corrective action programs that were not previously reviewed as part of the ICAVP SVSk inspection activities will be identified by the NRC. This sample of NNECo corrective actions will be evaluated in parallel with ICAVP system/process report compilation and assessment.

The review of NNECo corrective actions will verify the adequacy of NNECo's corrective actions and assess the implementation or proposed implementation of all corrective actions for systems and processes within the Millstone Unit 2 ICAVP scope. NNECo's corrective actions will be evaluated using the corrective actions checklists in project instruction PI-01 "SVSR Implementation Checklists and Workbook". The evaluation of NNECo corrective

actions that have not been fully implemented will be identified in the ICAVP Final Report to facilitate future review and evaluation of NNECo implementation activities.

6.3 PREPARE ICAVP FINAL REPORT

After completion of audit plan activities, an ICAVP Final Report will be prepared to summarize all project activities. A suggested table of contents the Final Report has been included as Exhibit 6-1. In parallel with completion of audit plan activities this outline will be updated and will be forwarded to the NRC and NNECo for review and concurrence. After NNECo and NRC concurrence, ICAVP engineers will be assigned to prepare individual sections.

6.4 ISSUE THE ICAVP FINAL REPORT

The draft ICAVP Final Report will be reviewed by the Technical Advisory Group for completeness and technical accuracy prior to issue to the NRC and NNECo. ICAVP group leaders will assist with the incorporation of the Technical Advisory Group comments. The ICAVP technical editor will be responsible for final editing and issue of the ICAVP Final Report. The ICAVP Final Report will be issued to the NRC and NNECo.

6.5 PROJECT CLOSEOUT AND RECORDS TURNOVER

Concurrent with the issue of the ICAVP Final Report, the Parsons Power team will perform project closeout and demobilization/re-assignment of project personnel. Applicable project documentation not previously transmitted to NNECo will be cataloged and turned over. Project files will be cataloged, indexed, and transferred to the Parsons Records Center for retention.

Exhibit 6-1

ICAVP FINAL REPORT OUTLINE

1.0 Executive Summary

2.0 Technical Advisory Group Report

3.0 ICAVP Results Summary & Conclusions

4.0 Conduct of ICAVP Audit

- 4.1 Objectives
- 4.2 Project Organization
- 4.3 Approach to ICAVP Audit
- 4.4 Reporting of Discrepancies

5.0 System Vertical Slice Review

- 5.1 Conclusions - SVSR
- 5.2 SVSR Review Summary
- 5.3 Discrepancy Report Summary

6.0 Accident Mitigation System Review

- 6.1 Conclusions - AMSR
- 6.2 Critical Design Characteristic Review Summary
- 6.3 Discrepancy Report Summary

7.0 Process Review

- 7.1 Conclusions - Process Review
- 7.2 Process Review Summary
- 7.3 Discrepancy Report Summary

8.0 Regulatory Review

- 8.1 Conclusions - Regulatory Review
- 8.2 Discrepancy Report Summary

9.0 NNECo Corrective Action Review

Appendices

7.0 SCHEDULE

After confirmation of a project start date, all schedules will be revised to show calendar commitments. All task assumptions and schedule logics will be discussed during the Millstone Unit 2 ICAVP Kick-off Meeting. Key schedule assumptions are noted below. Project status and schedule are discussed with NNECo and the NRC at periodic public meetings.

KEY SCHEDULE ASSUMPTIONS

- The NRC has approved selection of Parsons Power as the ICAVP Contractor for Millstone Unit 2.
- The NRC has approved the Parsons Power's Audit Plan.
- The NRC will select SVSR systems and approve SVSR system boundary identification. A two week period is assumed for SVSR system boundary identification and approval.
- NRC will select up to 3 SVSR systems to start the ICAVP.
- Nominal inspection periods have been assumed (no allowance for sample expansion, special evaluation, or excessive discrepancy report processing).
- Allowances for public meetings and NRC oversight activities will be determined on or before the Kick-off Meeting.
- The following NNECo calendar commitments have been used to establish this schedule revision.
  - NNECo has completed 50% of the Group 1 CMP systems on June 30, 1997.
  - NNECo has completed all Group 1 and Group 2 CMP systems on September 5, 1997.
- Activity durations based on 5 day workweek.