

VERMONT YANKEE SELF-ASSESSMENT PLAN

TITLE:

Service Water Operational Performance Inspection (SWOPI)

PRIMARY OBJECTIVES:

Assess the licensee's planned and completed actions in response to GL 89-13, "Service Water System Problems Affecting Safety-Related Equipment."

Verify that the Service Water System (SWS) is capable of fulfilling its thermal-hydraulic performance requirements and is operated consistent with its design basis.

Assess the SWS operational controls, maintenance, surveillance, and other testing, and personnel training to ensure the SWS is operated and maintained so as to perform its safety-related functions.

REQUIREMENTS:

Requested by management.

REFERENCES:

NRC Inspection Manual Temporary Instruction 2515/118, Revision 1, "Service Water Operations Performance Inspection (SWOPI)."

NRC Inspection Manual, Inspection Procedure 40501, "Licensee Self-Assessments related to Area-of-Emphasis Inspections."

NSAC/121, "Guidelines for Performance Safety System Functional Inspections."

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Technical Assessment Plan
Vermont Yankee; Service Water System (SWS)

1.0 INTRODUCTION

The following plan is intended to summarize the assessment scope, approach and methodology, schedule, responsibilities, team qualifications, findings, and corrective action.

2.0 SCOPE (Based on NRC Temporary Instruction TI 2515/118)

The assessment will be accomplished by performing a comprehensive review of the SWS components and system performance including design requirements; operating, maintenance, surveillance and other testing practices; maintenance and performance history; quality assurance and implementation of corrective actions. To ensure thorough coverage of the NRC temporary instruction Attachment B (SWOPI checklist) will be used to conduct the review.

3.0 APPROACH AND METHODOLOGY

This evaluation will be accomplished by performing a technical assessment of the Service Water System (SWS). The evaluation will start with the accumulation of baseline information in the form of a Design Basis Document (DBD). An emphasis will be placed on the evaluation of the modified system to the original design and licensing basis as well as any impact on related systems and programs.

In addition, selected industry events/concerns which relate directly to the SWS will be assessed. The licensee's response to Generic Letter 89-13 will be given attention in each of the subject areas. The assessment will be conducted using a team approach. The team will review NRC SWOPI results from other plants and focus on areas receiving greatest NRC attention.

The approach by subject area is summarized in the following sections.

3.1 Design Adequacy Review

The design adequacy review will assess the technical adequacy of the existing system focusing on essential safety and functional characteristics. The review will consider items such as design conditions and transients, component classification, equipment qualification, single failure criteria, potential flooding, common mode failure, and a selection of other attributes that contribute to the effectiveness of the system.

The review will also include the Impact of modifications on items such as:

Design Basis Documents

Pipe/equipment support design

The Fire Hazards analysis program (10CFR50, Appendix R)

Electrical and mechanical equipment qualification Class 1E controls and electrical system and electrical system analysis

Plant Technical Specifications

Vendor documentation

3.1.1 Mechanical System Review

The scope of the mechanical evaluation will involve a design review of system components that are required to satisfy the operational functions of the system as described in the design basis and licensing commitments. This evaluation will be primarily based on review of design documents, Design Change Packages (DCPs), discussions with plant and project personnel in the mechanical discipline, discussions with other team members, and a site walkdown of the installed systems.

The overall evaluation approach will be conducted in multiple phases as described below:

1. Review those sections of the PSAR and Licensing Commitment List which provide the design and regulatory commitments for the system. This portion of the review will provide a basis for familiarization with the system's safety and operational functional requirements.

2. Review the mechanical discipline calculations associated with the system to determine if the system design bases are supported by calculations or other suitable documentation. Assess the design margin provided.
3. Provide a review and comparison of selected design, purchase, installation, and equipment specifications to ensure proper interpretation and consistent use of specified system and component design conditions associated with Design Change Packages.
4. Review flow diagrams and piping drawings for consistency with design documents and licensing commitments.
5. Review Design Change Packages for consistency with the specification design conditions and adequacy of 50.59 evaluations.
6. Evaluate single active failure vulnerabilities of the system (Reference Action IV to GL 89-13).
7. Review interfacing systems with the Electrical and Structural/Mechanical team members for effect on SWS operability.
8. Determine if flow balancing has been conducted for various system operating modes.
9. Review the original basis and the impact of design changes on the Flooding Analysis (Reference NUREG 1275, Vol. 3).
10. Review the effectiveness of any design features installed to minimize silting and biofouling of piping and components.

A site walkdown will be performed to facilitate evaluation of certain attributes such as interconnection and interactions, as-built configuration, component layout, access for operations, inservice inspection, maintenance, physical separation of components, where applicable, and adequate consideration from the effects of weather (freezing of stagnant outdoor lines).

3.1.2 Electrical, Instrument and Control Review

The scope of this evaluation involves a system design review of the Electrical, Instrument and Control aspects of the SWS. The scope of the review includes the following areas:

Associated calculations, design margin and setpoints.

System electrical equipment and controls.

Power sources supplying power and controls to that equipment (including instrument power).

Consistency with interfacing systems.

Field verification as-built design and configuration relative to licensing requirements.

3.1.3 Structural/Mechanical

The evaluation will focus on the adequacy of the system as modified involving pipe stress analysis, pipe and equipment support and design, pipe rupture analysis, support of instruments and instrument tubing and seismic qualification of equipment. This evaluation will be made to examine the following attributes:

Consistency exists between the design and the licensing commitments (FSAR, licensing commitment letters, and other applicable documents).

Calculations supporting design modifications are adequate.

Non-safety-Related portions of the SWS can be isolated in accordance with the provisions specified in the design basis.

Performance of a field walkdown.

3.2 Operations Review

The objective of the operations evaluations is to determine that operators can perform the necessary activities to ensure that the system fulfills its safety functions. This determination will be made by assessing the adequacy of the instructions available to the operator, and the availability of system status information, such as instrumentation and alarms, at the time operator action is required.

The assessment of the operating instructions will consist primarily of a review of the system procedures, emergency operating procedures, alarm response procedures, and standing orders which affect the system. These procedures will be reviewed for adequacy (Reference GL 89-13, Action V), completeness, and consistency with the system as modified. The review will also assess the impact of modifications on the operator's ability to perform required functions.

The operator training program, lesson plans, and course materials will be reviewed for the system. The review will identify the level of detail the operators are provided in the system design, safety functions, and operation methods. It will evaluate if modifications are properly included in the training program.

Other operational controls that ensure correct alignment of SWS valves and proper functioning of traveling screens will also be assessed.

Finally, an assessment of the availability of essential system status information to the operator will be made. This status information includes system flows, pressures, temperatures, alarms, etc., which are required for initiation of operator responses, actions, and decisions. This assessment will be accomplished by reviewing design documents, reviewing the control station area, interviewing operating personnel, and an in-depth system walkdown (Reference Action IV to GL 89-13). Particular attention will be given to the availability of the system status information at the time when the system safety function will be required and local operation of equipment.

3.3 Maintenance Review

The objective of the maintenance evaluation is to verify that the maintenance performed on the system is adequate to ensure the system will perform its safety related function.

The evaluation will focus on the performance of maintenance as it relates to maintaining the functional capability of the system. Maintenance records will be reviewed to determine if all system safety-related components are included in the maintenance program. Additionally, the maintenance evaluation will supply and receive information from the other evaluation areas to ensure the actual interfaces used to communicate and document the maintenance process is assessed. Examples of these interfaces are activities such as release of equipment for maintenance and evaluation of recurring problems, etc.

The approach used to reach the objectives will consist of assessment of the physical conditions observed during system walkdown (Reference Appendix D of NRC TI 2515/118), review of applicable documents, discussions with selected maintenance personnel and, if possible, witness maintenance performed on the system.

3.3.1 Physical conditions will be determined through observation and backed up by the review of documentation such as machinery history records, failure reports, and maintenance work requests. From this effort the adequacy level of system/equipment maintenance will be determined. The system/equipment observations considered in the assessment include; but are not limited to the following:

Leaks/general conditions

Cleanliness/labeling

Environmental conditions where equipment is located

Erosion/Corrosion (Reference GL 89-13, Action III)

Silting/biofouling (Reference GL 89-13, Action III)

- 3.3.2 Documents will be assessed through review of maintenance procedures and guidelines which affect selected components within the system. The procedures will be reviewed for adequacy (Reference GL 89-13, Action V), completeness, and consistency with Vendor recommendations. Selected maintenance documents of the following types will be reviewed:

Preventative Maintenance

Corrective Maintenance

Maintenance Procedures

Maintenance Work Requests

Maintenance Training

Maintenance History

Maintaining Equipment Qualification

- 3.3.3 Maintenance training records will be reviewed to determine if maintenance personnel are being trained in maintenance processes and procedures.
- 3.3.4 Maintenance evaluation will include critical components and/or equipment or components that have exhibited a high number of failures. The entire maintenance process beginning with the identification of a problem and ending with the closeout of the maintenance work request will be reviewed for selected maintenance activities.

3.4 Surveillance and Testing Review

The objective of the testing review is to verify that testing performed on the system is sufficient to demonstrate that the system will perform the intended function during the most severe operating conditions.

The evaluation will focus on functional testing of the system (and components within the system).

- 3.4.1 Testing evaluation will begin with the accumulation of design and testing baseline information for the system, including

Initial preoperational test requirements and criteria

Technical specifications

FSAR

Periodic and surveillance test criteria

Response to GL 89-13 Action I & II

Plant drawings

IST Program

- 3.4.2 Selected samples of test data results will be evaluated and compared to the functional requirements of the system. These will include:

Samples of design change package test sections and test data to determine if specific test requirements are appropriate for the scope of modification; and acceptance criteria is adequate to verify that modifications to components/system are properly implemented and completed and intended function operation was adequately proven.

Sample of maintenance work requests will be evaluated to determine if post maintenance retest requirements are adequate to ensure components/system has been restored to a fully operational mode.

Implementation and effectiveness of actions I & II to GL 89-13 will be assessed.

3.4.3 The surveillance and testing evaluation review will cover a selected sample of the following components:

Pumps and Drivers

MOVs, Check Valves, Relief Valves

Safety-Related Heat Exchangers

Support Systems

3.4.4 Interviews with certain operators, supervisors, maintenance, and engineering personnel will be required to complete the evaluation.

3.5 Quality Assurance and Corrective Actions Review

The objective of this evaluation is to verify implementation of the Quality Assurance program for activities such as; on-site and off-site review committees, corrective action, technical specification operability determinations, trending and quality verification. The technical adequacy and resolution for SWS events and conditions identified by the licensee's self-assessments will be reviewed.

This evaluation will also evaluate whether the licensee's quality verification organizations are looking for and finding substantial problems.

4.0 SCHEDULE

Week 1 (12/13/93)	Team Leader and Director-Engineering Services completes assessment plan, assembles documentation, arranges work location for team, conducts orientation and training with assessment team and assigns areas for review.
Week 2 (12/20/93)	Team meets to prepare individual assessment plans, take GET, assemble and review DBD.
Week 3 (1/10/94)	Entire team meets <u>on-site</u> for entrance meeting, badging, walkdowns and personnel interviews.
Week 4 (1/17/94)	In-office review of assessment documentation and planning for next week on-site.
Week 5 (1/24/94)	<u>On-site</u> assessment activities resume. Follow up on questions/concerns from week #3.
Week 6 (1/31/94)	In-office review of assessment documentation and planning for the final week on-site. Review all outstanding concerns.
Week 7 (2/7/94)	<u>On-site</u> assessment activities resume. Follow up on questions/concerns from previous weeks. Tentative exit meeting with plant management on Friday.
Week 8 (2/14/94)	Team meets in office to compile assessment results and prepare report.
Week 9 (2/21/94)	Team Leader edits report and presents to Director - Engineering Services for review.
Week 10 (2/28/94)	Final report is issued.

5.0 RESPONSIBILITIES

5.1 Vice President of Engineering (VY)

Has overall responsibility for the SWS self assessment. Is responsible for providing Vermont Yankee support for the development, implementation and resolution of questions and concerns as outlined by this assessment plan.

5.2 Principal Engineer (VY)

Is responsible to provide plant/corporate cognizance and primary interface with the assessment team.

5.3 Department Supervisor/Manager (VY)

Are responsible to initiate compliance and reportability reviews as required by station procedures when documented concerns are potentially safety significant. Also responsible to initiate appropriate corrective action to resolve the concern.

5.4 Responsible Department Representative (VY)

Are responsible to provide a written response to all documented requests or concerns assigned to them during the assessment. The response should include corrective actions for all concerns concurred discrepant.

5.5 Director of Engineering Services (YAEC)

Is responsible for establishing program direction and oversight to the assessment team.

5.6 Vermont Yankee Project Manager (YAEC)

Is responsible for providing the project support necessary for the assessment development, implementation and resolution of questions and concerns as outlined by this plan.

5.7 Assessment Team Leader (YAEC)

Is responsible to direct the course of the inspection and to keep the inspection focused on the important issues. Is responsible to provide orientation and training to team members on the approach, methodology and overall expectations. Is responsible for reviewing and approving checklists, supplements, individual review plans and plant responses to all documented concerns. Is responsible to promptly advise plant management personnel of potential safety/operability items.

5.8 Assessment Team Member (YAEC)

Is responsible to develop and implement a review plan to evaluate the subject area(s) assigned in the SWOPI checklist. Each team member will keep field notes and a list of documents reviewed and personnel interviewed during the assessment. Each team member will write a factual account of how each objective was satisfied whether or not problems or concerns are uncovered during the review. Each team member will document questions/concerns using Attachment A.

NOTE: Key members of the team will be dedicated to the assessment by relieving them of their normal responsibilities. Key members include: Team Leader, Mechanical Design Reviewer, Maintenance Reviewer, Operations Reviewer and the Surveillance and Testing Reviewer.

6.0 TEAM QUALIFICATIONS

Technical Self-Assessment Program Oversight - Director of Engineering Services. Past Project Manager for Seven (7) Safety System Functional Inspections (SSFI). BWR Systems and Simulator Training. Participant in SWS assessment at another plant.

Team Leader - Audit Group Supervisor/Certified Lead Auditor. Project Manager of the SWS Safety System Functional Audit (SSFA) at another plant. Past Rowe Simulator Supervisor/Project Engineer.

Mechanical Design Reviewer - (consultant with extensive SWS design and evaluation experience)

Electrical Design Reviewer - Lead Electrical Engineer for Northeast Utilities Project. Team member on MOV self-assessment and SWS self-assessment at other plants.

Mechanical/Structural Design Reviewer - Senior Mechanical Engineer. Registered Professional Engineer. Experience includes SWS design analysis.

Maintenance Reviewer - Manager Plant Support Department. Past Maintenance Director and Maintenance Support Supervisor at Yankee Rowe. Development and implementation of SWS preventive and predictive maintenance programs including (GL 89-13 Actions)

Operations Reviewer - Technical Director at Yankee Rowe. Experience in PWR and BWR Power Plant Design, Analysis, Operation and Management. Past Outage Coordinator and Vermont Yankee Project Engineer. Project Manager for Rowe EOP Development, Verification and Validation.

Surveillance and Testing Reviewer - (consultant with extensive SWS design and evaluation experience)

QA/QC Reviewer - QA Audit Division Manager for Boston Edison. BWR System Training, Certified Lead Auditor.

7.0 QUESTION/CONCERN PROCESSING AND CORRECTIVE ACTION

During the assessment, questions or potential concerns shall be documented (see Attachment A - Question/Response Form) and presented to the responsible organization for response or reply. See Figure 1 for flowchart of the question/concern resolution process and Figure 2 for the team organization and VY interface. The timeframe allowed for response will be determined by the Team Leader and shall be commensurate with the significance of the concern. The Team Leader screens all concerns to identify the significant concerns. Conditions and concerns that are potentially safety significant will be promptly brought to plant management's attention for their action including determination of operability and reporting/notification. Responses will be reviewed by the originator of the question/concern and the team leader for adequacy.

Where appropriate, the response should address the type of corrective action taken and/or proposed. Where responses do not resolve potential concerns, discussion will continue until resolution is achieved. The Team Leader has access to all levels of management but if the concern cannot be resolved prior to the exit meeting it will be identified as a QA finding that requires response and disposition via the audit process. All documented questions and responses will be kept as records of the assessment.

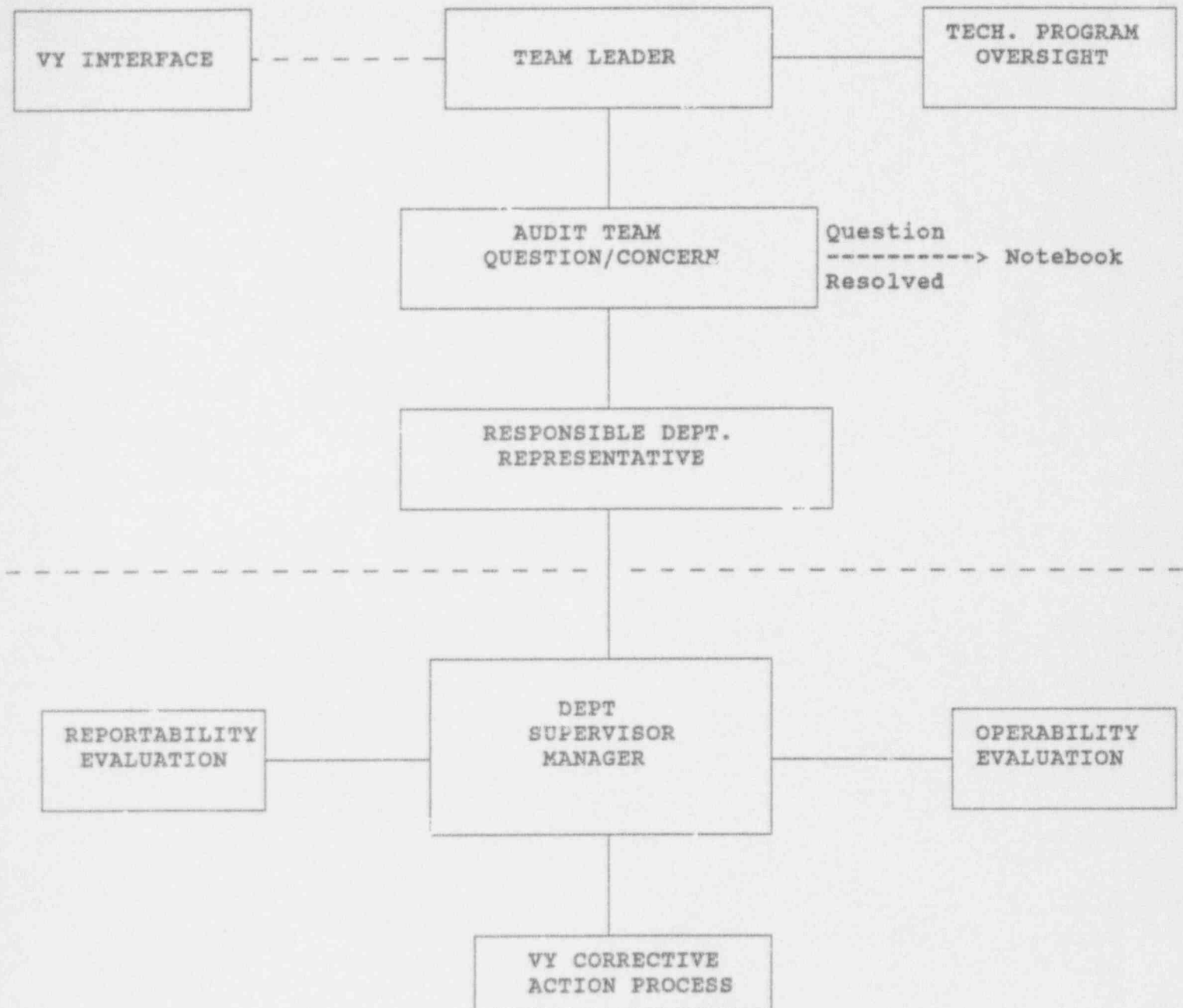
8.0 SELF ASSESSMENT REPORT

All unresolved concerns will be identified in the assessment report as Quality Assurance (QA) findings. Strengths and opportunities for improvement will also be included in the report.

9.0 FOLLOW-UP VERIFICATION

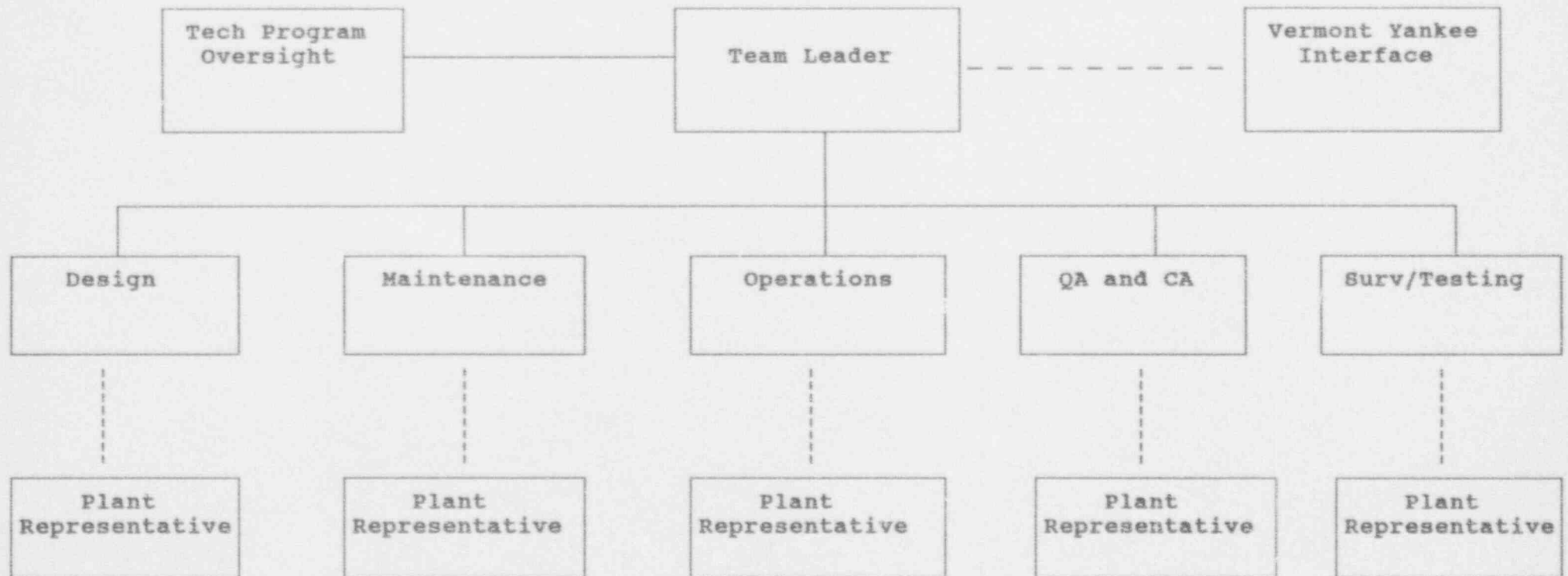
QA will track, follow-up and close out all identified concerns.

FIGURE 1 - QUESTION/CONCERN RESOLUTION



OCCURRENCE REPORTS	AP 0010
COMMITMENT TRACKING	AP 0028
NON CONFORMANCE	AP 6021
MAINTENANCE REQUEST	AP 0021
CORRECT. ACTION REQ.	AP 0007

FIGURE 2
TEAM ORGANIZATION
AND INTERFACE



ATTACHMENT A - SERVICE WATER SYSTEM SELF-ASSESSMENT

QUESTION/RESPONSE FORM

QUESTION NO. _____

DATE/TIME: _____

AUDITOR: _____

TEAM LEADER: _____

SUBJECT: _____

QUESTION/REQUEST:

VY RESPONSE ASSIGNED TO: _____ VY RESPONSE DATE: _____

VY RESPONSE:

Attachment B. SWOPI REVIEW CHECKLIST

2515/118-01	OBJECTIVES	ASSIGNED TO:
01.01	Assess the licensee's planned or completed actions in response to Generic Letter 89-13.	
01.02	Verify that the SWS is capable of fulfilling its thermal and hydraulic performance requirements and is operated consistent with its design bases.	
01.03	Assess the SWS operational controls, maintenance, surveillance, and other testing, and personnel training to ensure the SWS is operated and maintained so as to perform its safety related functions.	
2515/118-02	BACKGROUND Previously identified SWS problems include: inadequate heat removal capability, biofouling, siting, single failure concerns, erosion, corrosion, insufficient original design margin, lapses in configuration control or improper 10 CFR 50.59 safety evaluations, and inadequate testing.	
2515/118-03	INSPECTION REQUIREMENTS	
03.01	Mechanical Systems*Engineering Design Review*Configuration Control	
a.[1]	Review the design-basis and other design documents such as calculations and analyses for the SWS, and determine the functional requirements for SWS and each active component during accident or abnormal conditions. Include the appropriateness of the design assumptions, boundary conditions, and models.	
	STATUS:	
a.[2]	Determine if the system design is in accordance with facility's licensing commitments and regulatory requirements.	
	STATUS:	
a.[3]	Determine if the system will meet the thermal and hydraulic performance requirements.	
	STATUS:	
a.[4]	Determine if associated design output documents such as facility drawings and procurement specifications are consistent with the design bases and engineering analyses.	
	STATUS:	
b.	Review the SWS configuration drawings for consistency with applicable design documents, NRC requirements, and licensing commitments.	
	STATUS:	
c.	Review the SWS operation as compared to the design documents.	
	STATUS:	
d.[1]	Evaluate single active failure vulnerabilities of the system and the resulting impact on interfacing system components such as emergency diesel generators.	
	STATUS:	
d.[2]	Evaluate the effect on SWS operability of failures to interfacing systems, such as instrument air.	
	STATUS:	
d.[3]	Examine potential common mode failures from fouling of common intakes or traveling screens.	
	STATUS:	

Attachment B. SWOPI REVIEW CHECKLIST

03.01 e.[1]	Review the effectiveness of any design features installed to minimize silt and biofouling of the piping and components.	
	STATUS:	
e.[2]	Verify if features are provided for the timely detection of flow degradation.	
	STATUS:	
e.[3]	Verify if flow balancing has been conducted during various system operating modes. Flow balancing verification should be done for worst case combinations of pump operation.	
	STATUS:	
e.[4]	Verify that pump runout conditions are not present with minimum number of pumps operating with worst case alignment of non-safety related loads.	
	STATUS:	
e.[5]	Evaluate minimum and maximum limits for valve positions and ensure these limits are properly translated into operational controls.	
	STATUS:	
e.[6]	Verify that system flow balance is consistent with key design assumptions, where available, for flow coefficients, rated pressure drops across components and piping, rated heat removal, heat exchanger fouling, and total system flow for operating modes.	
	STATUS:	
f.	Check whether design features are provided to mitigate the effects of flooding caused by SWS leaks.	
	STATUS:	
g.	Review the safety-related portion of the system for seismic qualification and verify that non-safety-related portions can be isolated in accordance with the provisions specified in the system design bases.	
	STATUS:	
h.	Review all modification to the SWS. Include 50.59 evaluations and ensure that the changes have not compromised the system design basis and have included revised maintenance requirements and procedures, operating procedures, training, and periodic testing as necessary.	
	STATUS:	
i.	Evaluate the assessment to Action IV of GL 89-13. Special note on system alignment.	
	STATUS:	
j.	Review the program for monitoring system degradation. Evaluate performance trending, and adequacy of engineering evaluation and operability determinations.	
	STATUS:	
k.	Review the setpoints for alarms and actuations to ensure they are consistent with the design basis and assumptions.	
	STATUS:	

Attachment B. SWOPI REVIEW CHECKLIST

03.02	Operations	
a.	Perform an in-depth system walkdown. Review the P&ID configuration for consistency with design drawings.	
	STATUS:	
b.[1]	Review the SWS alarm response procedures and operating procedures for normal, abnormal, and emergency system operations to assure the system is operated within the design envelope.	
	STATUS:	
b.[2]	Review the implementation of operating and alarm response procedures. Assess adequacy of flow instrumentation relied upon during accident conditions.	
	STATUS:	
b.[3]	Review available operating logs to determine adequacy of temperature and flow monitoring.	
	STATUS:	
c.	Review operator training for the SWS, focusing on the technical completeness and accuracy of the training manual and lesson plans. Ensure that the lesson plans reflect the system modifications and that the licensed operators have been trained on these modifications.	
	STATUS:	
d.[1]	Review the proper implementation of procedures for verifying periodic and post-maintenance alignments of valves in the SWS especially those valves that isolate flow to safety-related components.	
	STATUS:	
d.[2]	Verify that required accident condition flow is not degraded during normal system operation valve alignments.	
	STATUS:	
d.[3]	Review the method used to verify proper SWS throttle valve position.	
	STATUS:	
d.[4]	Review control of SWS heat exchanger flow variations due to changing climate (temperature) conditions.	
	STATUS:	
e.	Walk through the system operating procedures and the system P&IDs. Verify that the procedures can be performed and that components & equipment are accessible for normal and emergency operation. If any special equipment is required to perform these procedures, determine if the equipment is available and in good working order. Verify that the operator's knowledge of equipment location and operation is adequate.	
	STATUS:	
f.	Interview the operators to determine the adequacy of their technical knowledge of such items as the operation of the system, its role in accident mitigation, technical specification surveillance requirements, and determination of operability.	
	STATUS:	

Attachment B. SWOPI REVIEW CHECKLIST

03.02 g.	Review the local operation of equipment. Determine if the indication available to operate the equipment is in accordance with applicable operating procedures and instructions. Verify that the environmental conditions, such as expected room temperature, emergency lighting, and steam, assumed under accident conditions are adequate for remote operation of equipment.	
	STATUS:	
h.	Assess operational controls for traveling screens and circulating water pumps to preclude excessive drawdown of the intake bay, with associated loss of SWS pump suction head, as a result of clogging the traveling screens.	
	STATUS:	
03.03	Maintenance	
a.	Conduct an indepth system walkdown to review the as-configured system for material condition. (Reference Appendix D of TI 2515/118.)	
	STATUS:	
b.	If possible, witness maintenance performed on SWS. Review package prep and observe QC involvement.	
	STATUS:	
c.	Review maintenance procedures for technical adequacy. Compare to vendor manuals to identify any vendor recommendations not incorporated. Verify that important manuals are complete and up to date.	
	STATUS:	
d.	Review the maintenance program for removal and repair of SWS piping and interface system components due to silting, biofouling, corrosion, erosion, and failure of protective coating.	
	STATUS:	
e.	Determine if the SWS components are being adequately maintained to ensure their operability under all accident conditions. Review information regarding unavailability due to planned maintenance as an indicator of maintenance adequacy.	
	STATUS:	
f.	Review the maintenance history for the selected components of the SWS for the past two operating cycles (minimum of 2 years) or longer if necessary. Look for recurring equipment problems and determine if any trends exist. Evaluate the adequacy of the root cause analysis and corrective actions implemented in response to adverse trends. Review for tech adequacy, performance of appropriate post maintenance testing, and satisfactory demonstration of equipment operability.	
	STATUS:	
g.	Conduct detailed interviews with the maintenance personnel to determine their technical knowledge of how components are maintained, such as the setting of limit switches, the alignment of pump couplings, cleaning and replacing filters, and the maintenance of circuit breakers.	
	STATUS:	

Attachment B. SWOPI REVIEW CHECKLIST

Q3.03.1	Determine if maintenance personnel receive adequate training pertaining to the SWS and if the degree of training provided is consistent with the amount of technical detail in the procedures.	
	STATUS:	
	Review the periodic inspection program used to detect corrosion, erosion, protective coating failure, siting and biofouling.	
	STATUS:	
Q3.04	Surveillance and Testing	
a.	Review and evaluate the technical adequacy and accuracy of the technical specification surveillance procedures and inservice test procedures performed in the past two operating cycles (minimum of 2 years) for the SWS.	
	STATUS:	
b.	Review the SWS design and testing basis. Verify that test acceptance criteria are consistent with the design basis to ensure the SWS testing adequately demonstrates that the SWS will operate as designed. Review indicators of SWS performance to identify if any testing inadequacies exist or if test frequency is appropriate. Determine if surveillance test procedures comprehensively address required SWS responses.	
	STATUS:	
c.	Review results from pre-operational testing to determine whether the SWS capabilities and limitations were appropriately demonstrated. Determine whether appropriate controls were established to avoid unacceptable system or component operating regimes such as limiting valve travel to avoid pump runout conditions.	
	STATUS:	
d.	Evaluate the support systems and plant modifications to ensure that surveillance and testing has been properly performed.	
	STATUS:	
e.	Review the inservice test records for pumps and valves in the SWS, with an emphasis on the technical adequacy of procedures, trending of test results and recurrent failures. Review the IST program for completeness.	
	STATUS:	
f.	Review how specific SWS instruments are calibrated and tested, how valve stroke time testing is performed, and how and where temporary test equipment is installed to verify compliance with technical specification operability requirements. Verify the tolerance used for instrument accuracy is acceptable.	
	STATUS:	
g.	If possible, witness post-maintenance, surveillance, and inservice tests performed on the SWS.	
	STATUS:	
h.	Review procedures for periodic testing of safety-related heat exchanger heat transfer capability and the trending of such results.	
	STATUS:	

Attachment B. SWOPI REVIEW CHECKLIST

03.04 i.	For the two previous operating cycles (2 years minimum) preceding the inspection, ascertain the system train, pumps, or significant component unavailability during power and shutdown conditions. Compare the actual unavailability data to that assumed by the IPE.	
	STATUS:	
j.	Verify that the installed SWS components are tested to ensure the components will perform in accordance with their design bases.	
	STATUS:	
k.	Review the implementation of the periodic inspection program to detect flow blockage from biofouling in other systems. This includes the fire protection system that uses the same source of water as the SWS.	
	STATUS:	
l.	Review testing on one air-to-water heat exchanger served by the SWS to ensure proper heat transfer. Examine the air side for fouling.	
	STATUS:	
03.05	Quality Assurance and Corrective Actions	
a.	Review the meeting minutes of the plant onsite safety review committee and the offsite safety review committee for the past six months for items pertaining to the SWS.	
	STATUS:	
b.	Review the operational history of the SWS, including LERs, NPRDS, 10CFR50.72 reports, enforcement actions, NCR's, T/S operability determinations, maintenance work requests, and adverse test results or recurrent test failures. Emphasize the adequacy of root-cause evaluations.	
	STATUS:	
c.	Compare the results of the (NRC) team's assessment of the areas inspected for the SWS with the results of applicable licensee quality verifications activities in the same areas (i.e. operations, maintenance, surveillance and testing, engineering design, and design control). Determine why the licensee's activities did not uncover significant issues identified by the (NRC) team.	
	STATUS:	
d.	Review the timeliness and technical adequacy of licensee resolution of findings from its self-assessments. Review the open item tracking system items pertaining to the SWS for adequate tracking and closure of identified deficiencies.	
	STATUS:	
e.	Evaluate the interface between engineering and technical support (E&TS) and plant operations, regarding corrective actions to resolve operational problems.	
	STATUS:	