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September 20, 1995
C321-95-2179

U. S. Nuclear Regulatory Commission
Att: Document Control Desk
Washington, DC 20555

Gentlemen:

Subject: Oyster Creek Nuclear Generating Station (OCNGS)
Operating License No. DPR-16
Docket No. 50-219
Service Water System Operational Performance Inspection (SWSOPI)
Self-Assessment Plan

GPU Nuclear letter dated March 9, 1995 (C321-95-2050) proposed a SWSOPI self-assessment as an alternative to the full scope NRC inspection described in the NRC Temporary Instruction 2515/118, Revision 1, "Service Water System Operational Performance Inspection."

Enclosed for NRC review is the proposed OCNGS Self-Assessment Plan. This self-assessment plan proposes a reduced-scope SWSOPI based on the performance of an in-depth NRC Safety System Functional Inspection (SSFI) of the OCNGS Emergency Service Water and Containment Spray Systems. The SSFI was performed by an extensive NRC team from August 14 to September 15, 1989. The NRC team consisted of seven (7) members, including three (3) consultants responsible for the areas of mechanical design, electrical, and instrumentation and controls. The NRC SSFI was conducted by an experienced NRC team over a one (1) month period, and the results of the SSFI are documented in NRC Inspection Report No. 50-219/89-80, dated October 26, 1989. The OCNGS service water systems included in the SSFI and the proposed SWSOPI self-assessment are limited to the Emergency Service Water System and components. The above considerations support the justification of

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a reduced-scope SWSOPI self-assessment. Additionally, the experience gained and lessons-learned from the TMI-1 SWSOPI self-assessment (April/May 1995) will further enhance the effectiveness of the proposed OCNGS reduced-scope SWSOPI. The plan addresses scope, schedule, and the multi-discipline team to be utilized in the assessment. GPU Nuclear requests NRC staff acceptance of this self-assessment as an alternative to the staff conducting a team inspection of this area. This request is being made in accordance with the guidance of NRC Inspection Procedure 40501, "Licensee Self-Assessments Related to Area-of-Emphasis Inspections." GPU Nuclear will provide a formal presentation to Region I staff to present the various elements of the attached plan, if appropriate. NRC concurrence of our self-assessment plan is requested by September 29, 1995 to support start of the inspection by October 18, 1995.

Our self-assessment will meet the objectives and requirements specified in NRC Temporary Instruction 2515/118, Revision 1, as clarified in the attached plan. The self-assessment project has an overall team leader, an assessment team, and a response team. Individuals are assigned to each of the teams for the duration of the inspection. The self-assessment team is composed of GPU Nuclear employees and consultants from industry. The self-assessment team members have been selected consistent with the guidance provided in TI 2515/118 and IP 40501, and consultant team members have been selected based on their experience in conducting similar inspections.

The self-assessment activities are scheduled to begin October 18, 1995 and continue for approximately four (4) weeks. A formal entrance meeting is scheduled for the afternoon of October 18, 1995. The Final Assessment Report is scheduled for issuance in December 1995. GPU Nuclear will provide the self-assessment results and corrective actions to the NRC at that time.

If any additional information is needed, please contact David Distel, Senior Licensing Engineer at (201) 316-7955.

Sincerely,

J. J. Barton,
Vice President and Director, OCNGS

Enclosure
DJD/plp

c: Administrator, Region I
OCNGS Senior Resident Inspector
OCNGS NRC Senior Project Manager
E. M. Kelly - Division of Reactor Safety, Region I

ENCLOSURE TO C321-95-2179

GPU NUCLEAR CORPORATION

OCNGS

SERVICE WATER SYSTEM OPERATIONAL PERFORMANCE INSPECTION

REDUCED-SCOPE

SELF-ASSESSMENT PLAN

SEPTEMBER 15, 1995

OCNGS
Reduced-Scope Assessment Plan
Service Water System Operational Performance Inspection (SWSOPI)

1.0 OBJECTIVE

To perform a reduced-scope self-assessment of the OCNGS Emergency Service Water System to verify that the system design, operation, and performance meets the design basis and regulatory requirements. This self-assessment will consider the results of the in-depth NRC Safety System Functional Inspection (SSFI) for the Emergency Service Water and Containment Spray Systems at OCNGS performed from August 14 to September 15, 1989 to support a reduced-scope SWSOPI. The objective of the SSFI was to assess the operational capability of the Emergency Service Water (ESW) and Containment Spray (CS) Systems to perform their design basis safety functions. The SSFI team evaluated the adequacy of operational procedures, test practices, maintenance policies, and quality of design control. The SSFI team concluded that the ESW and CS Systems were capable of performing their design basis safety functions.

Consistent with TI 2515/118, Revision 1, the objectives of the reduced-scope SWSOPI are as follows:

1. Assess planned or completed actions in response to Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment."

2. Verify the Emergency Service Water System is capable of fulfilling its thermal and hydraulic performance requirements and is operated consistent with its design basis in specific areas not adequately addressed by the NRC SSFI and where appropriate based on SSFI findings.

3. Assess the operational controls, maintenance, surveillance, and other testing and personnel training to ensure the Emergency Service Water System is operated and maintained so as to perform its safety-related functions, in the areas not adequately addressed by the NRC SSFI and where appropriate based on SSFI findings.

2.0 SCOPE

The assessment will be accomplished by performing a comprehensive review of the OCNGS Emergency Service Water (ESW) System components and system performance including design requirements; operation, maintenance, surveillance and other testing practices; maintenance and performance history; quality assurance and implementation of corrective actions. However, this SWSOPI self-assessment will not duplicate elements of the above review areas which have been adequately and fully addressed by the NRC SSFI referenced above. TI 2515/118, Revision 1 inspection elements related to Generic Letter 89-13 Actions will be addressed by this self-assessment since these areas were not generally included in the SSFI, except where specifically identified in Section 3 below. This self-assessment will fully address TI 2515/118, Revision 1 inspection elements not included in the NRC ESW SSFI, and will also follow-up on the specific issues and findings identified in the NRC ESW SSFI Inspection Report No. 50-219/89-90, dated October 26, 1989.

The NRC SSFI Inspection Procedure No. 93801 was compared to the SWSOPI TI 2515/118, Revision 1 to identify inspection elements that may be repetitive in scope. It is recognized that the NRC SSFI Inspection Procedure 93801 was not issued until July 23, 1990 and therefore may not have been directly utilized by the NRC SSFI team. Accordingly, to ensure thorough coverage of the NRC SWSOPI temporary instruction, a detailed review of the NRC ESW SSFI Inspection Report No. 50-219/89-80, dated October 26, 1989, was performed to identify SWSOPI review elements not addressed by the SSFI and to identify SSFI findings for follow-up by the SWSOPI. Attachment A provides the OCNGS reduced-scope SWSOPI checklist which will be used to conduct the SWSOPI evaluation. This checklist may be augmented as appropriate by the team leader.

3.0 APPROACH AND METHODOLOGY

This evaluation will be accomplished by performing a technical assessment which will begin with the accumulation of baseline information in the form of System Design Basis Documents (SDBDs). Overall system operation will be assessed to ensure it is being operated and maintained within its design basis to fulfill safety functions. Emphasis will be placed on the evaluation of permanent/temporary changes made to each system and the impact on 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 Emergency Service Water System will be assessed. The OCNGS response to Generic Letter (GL) 89-13 will be reviewed in each of the subject areas. The assessment will be conducted using a team approach. The assessment team will review SWSOPI results from other plants and incorporate these considerations and lessons learned in the inspection.

The general approach is to supplement the inspection areas evaluated in the NRC SSFI, and is summarized by subject areas in the following sections. The detailed SWSOPI inspection plan is provided in Appendix A.

3.1 DESIGN REVIEW

The design review will assess the technical adequacy of the existing system concentrating 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, corrosion/erosion due to flow and biological mechanisms, 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:

System Design Basis Documents
UFSAR
Calculations
Procedures and Tests
Plant Technical Specifications
Vendor Documentation
Training

3.1.1 Mechanical System Review

The scope of the mechanical evaluation will involve a design review of the system components that are required to satisfy the operational functions of the system as described in the design and licensing basis. This evaluation will be primarily based on review of design documents, design change packages, discussions with plant and project personnel in the mechanical discipline, and a site walkdown of the installed system. The design reviewers will interact with the other members of the team to provide an integrated design review and ensure these other review areas are consistent with design aspects.

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

1. Review those sections of the Updated Final Safety Analysis Report (UFSAR) and Licensing Commitments which provide the licensing basis for the system. Review Emergency Service Water System Design Basis Documents which provide the system's original design basis and functional requirements, as well as post startup operation changes, thus establishing the present basis for the current as-installed service water system. This portion of the review will identify the system's safety and operational functional requirements on which the inspection elements will be assessed.

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 margins 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 design change packages for consistency with the specification design conditions and adequacy of 10 CFR 50.59 evaluations.

5. Evaluate single active failure vulnerabilities of the system (Reference Action IV to GL 89-13).

6. Review interfacing systems for effect on service water system operability.

7. Determine if flow balancing has been conducted for various system operating modes.

8. Review the original basis and the impact of design changes on the Flooding Analysis (Reference NUREG 1275, Vol. 3).

9. 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, in-service inspection, maintenance, physical separation of components, where applicable, and adequate consideration from the effects of weather.

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 system. 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 of as-built design and configuration relative to design and licensing requirements.

3.1.3 Structural/Mechanical

The evaluation will focus on the seismic adequacy of the system. This evaluation will be made to examine the following attributes:

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

Calculations supporting design modifications are adequate.

Non-safety-Related portions of the system 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. These determinations 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. Operator response to OCNGS simulator training scenarios will be observed, where possible.

Assessments of the operating instructions will consist primarily of a review of system procedures, emergency operating procedures, alarm response procedures, and applicable standing orders. 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's 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 system valves and proper functioning of traveling screens will also be assessed.

Finally, assessments 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. These assessments 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 it's 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 each system is adequate to ensure that it 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 systems. Maintenance records will be reviewed to determine if all system safety related components are addressed by 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 are assessed. The adequacy of programs and processes utilized for equipment failure trending, corrective actions implementation, and root cause analysis will be assessed. The adequacy of post-maintenance testing programs will be evaluated.

The approach used to reach the objectives will consist of assessments of the physical conditions, review of applicable documents, discussions with selected maintenance personnel and, if possible, the witnessing of maintenance performed on each system.

3.3.1 Physical conditions will be determined through observation and backed up by the review of documentation such as maintenance 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 conditior
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 History
Maintenance Equipment Qualification
Equipment Failure Trending

3.3.3 Maintenance evaluations 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 it will perform the intended functions 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:

Technical Specifications
UFSAR
Periodic and Surveillance Test Criteria
Response to GL 89-13 Action I and 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:

Sample of maintenance work requests will be evaluated to determine if post-maintenance testing requirements are adequate to ensure components/systems have been restored to a fully operational mode.

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

3.4.3 The surveillance and testing evaluation reviews will cover selected samples of the following components:

Pumps and Drivers
MOVs, Check Valves, Relief Valves
Safety Related Heat Exchangers
Support Systems
Instruments

3.4.4 Interviews with certain operators, supervisors, maintenance, and engineering personnel will be performed.

3.4.5 Other specific areas to be reviewed include: the effectiveness of testing to identify piping thinning and flaws, as well as the verification of total flow rates, the adequacy of current test methods to verify that intended results are correctly indicative of the acceptance criteria, and the verification that surveillance results represent pipe conditions as well as heat exchanger conditions.

3.5 QUALITY ASSURANCE AND CORRECTIVE ACTIONS REVIEW

The objective of these evaluations 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 service water system events and conditions identified by the self-assessments will be reviewed. These evaluations will also review whether the quality verification organizations are looking for and finding substantial problems.

Additionally, included in these reviews will be an overall assessment of compliance to the Licensing commitments associated with GL 89-13 and the service water system.

4.0 SWSOPI TEAM ASSESSMENT SCHEDULE

Week 1 (10/18/95) - GPUN Assessment Team leader conducts orientation and training with assessment team and assigns areas for review. Contractors are badged. Team reviews documentation and finalizes individual review plans based on SWSOPI checklist. Entire inspection and response

teams meet for entrance meeting the afternoon of October 18, 1995, conduct walkdowns and personnel interviews, start documentation review, review SSFI followup items, and plant presentations. (Onsite)

Week 2 (10/23/95) - Assessment activities continue onsite.

Week 3 (10/30/95) - Assessment activities continue onsite. Review outstanding questions/concerns from Week #1 & 2.

Week 4 (11/06/95) - Assessment activities continue offsite.

Week 5 (11/13/95) - Assessment activities continue onsite and summary conclusions made. Exit meeting with plant management/NRC on Friday, November 17, 1995. Exit meeting could occur prior to this date if all inspection elements are complete. (Onsite)

Assessment Team compiles assessment results and writes report. The draft report is presented to GPUN management for review by December 15, 1995. Final SWSOPI report issued by December 29, 1995.

5.0 RESPONSIBILITIES

5.1 Technical Functions Division Vice President

Has overall responsibility for the SWSOPI self-assessment. Provides necessary resources for the establishment of an Assessment Team to successfully implement the requirements of this plan. Also provides resources to support implementation of a SWSOPI Response Team.

5.2 OCNGS Division Vice President

Is responsible to provide plant support in the implementation of the assessment plan and for question/concern resolution associated with the assessment process including potential operability issues. Also provides resources to support implementation of a SWSOPI Response Team.

5.3 Director, Technical Functions Mechanical Engineering Department

Is responsible for providing the overall project leadership necessary for the assessment development and implementation as well as resolution of assigned questions and concerns. Also ensures appropriate independence of assessment team members.

5.4 Assessment Team Leader

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, and for ensuring that team members appropriately follow through on questions and potential concerns. Is responsible to promptly advise plant management personnel of potential safety/operability items. Is responsible for developing a summary report of assessment findings.

The SWSOPI Self-Assessment Team organization and interfaces are shown on Figure 2. Summaries of the experience of individual team members is provided in Section 6.0 below.

5.5 Assessment Team Member

Is responsible to develop and implement a plan to evaluate the subject area(s) assigned in the SWSOPI 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 B.

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

5.6 Support Staff

The Assessment Team will have a staff of personnel to facilitate the inspection by providing clerical and administrative support, and Licensing-related support to assist the team leader and Assessment Team members as necessary.

5.7 Response Team Leader

Is responsible for managing Response Team interactions with the Assessment Team, and to ensure potential operability issues are adequately addressed in a timely manner. Ensures proper staffing to enable rapid response to Assessment Team findings and requests for information. The Response Team Leader also ensures proper communication of concerns, findings, and potential operability issues to plant management.

5.8 Response Team Members

Team members within each assessment review area will develop responses to Assessment Team findings and open items, respond to Assessment Team requests for information, and facilitate plant walkdowns and inspections for the Assessment Team.

6.0 TEAM QUALIFICATIONS

Assessment Team Leader

H. B. Shipman - GPUN Special Projects Director, Advanced Light Water Reactor Program, Technical Functions Division. Twenty-three years total nuclear industry experience. Twenty-one years experience with GPUN. Maintained a Senior Reactor Operator License for 15 years on TMI-1. Seventeen years plant operations experience at TMI-1 includes 14 years in operations engineering and supervision and 3 years management experience as Plant Operations Director. Three years Nuclear Navy experience with reactor operator certification.

Design Reviewer

C. Allen - Engineering consultant with 24 years total nuclear industry experience, which includes 15 years engineering, design, and project management experience, and four years Nuclear Navy operations experience. Has participated in numerous GPUN

Safety System Functional Inspections (SSFI) at OCNGS and TMI-1. Also participated as NRC consultant on SSFI team at Duane Arnold on River Water Supply, Emergency Service Water and Residual Heat Removal Service Water Systems, and on NRC inspection team on the Trojan Plant response to INPO SOER 86-03, "Check Valve Failure or Degradation."

Maintenance and Quality Assurance/Corrective Actions Reviewer

R. P. Warren - GPUN Consulting Engineer, TMI-1 Independent Onsite Safety Review Group. Has 23 years engineering, design, and testing experience. Responsible for performing independent assessments of plant activities involving nuclear safety. Has experience conducting TMI-1 Safety System Functional Inspections and participated in the SWSOPI at TMI-1.

Operations and Surveillance/Testing Reviewer

L. J. Armstrong - Engineering consultant (OGDEN) with 12 years experience in project management, systems design review, assessment and audit support, reactor operator training and operations support. Has a Senior Reactor Operator certificate on the Zion Plant. Has participated on SWSOPI at Crystal River 3, Shearon Harris, and TMI-1.

7.0 QUESTION/CONCERN PROCESSING AND CORRECTIVE ACTION

During the assessment, questions or potential concerns shall be documented (see Attachment B - Questions/Response Form) and presented to the responsible organization for response or reply. See Figure 1 for flowchart of the question/concern resolution process. Concerns will be responded to in a timely manner with the goal of responding to each concern before the exit. The priority of responses will be based on safety significance. The Assessment Team Leader and the Response Team Leader screen all concerns to assess impact on the system's safety function. Conditions and concerns that are potentially safety significant will be promptly brought to the plant management's attention for their action including determination of operability and reporting/notification. Established nonconformances, deficiencies, or defects will be identified and addressed through approved corrective action processes, where appropriate.

Responses will be reviewed by the originator of the question/concern and the Assessment 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 Assessment 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 an action item that requires a response and disposition via the Licensing Information Tracking System maintained by the Planning and Regulatory Affairs Department. This system will identify the responsible individual and schedule for resolution. 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 SWSOPI open items and entered into the Licensing Information Tracking System (LITS), as appropriate. As stated above, corrective action programs such as the MNCR process will also be utilized where appropriate. Strengths and opportunities for improvement will also be included in the report.

9.0 FOLLOW-UP VERIFICATION

Planning and Regulatory Affairs Department will track identified concerns within the LIT System. Assigned responsible departments will follow-up and close out these concerns. The priority and timeframe for resolution of open items will be established by the Emergency Service Water System Performance Team (SPT), management, licensing, and departments responsible for responding.

FIGURE 1
QUESTION/CONCERN RESOLUTION

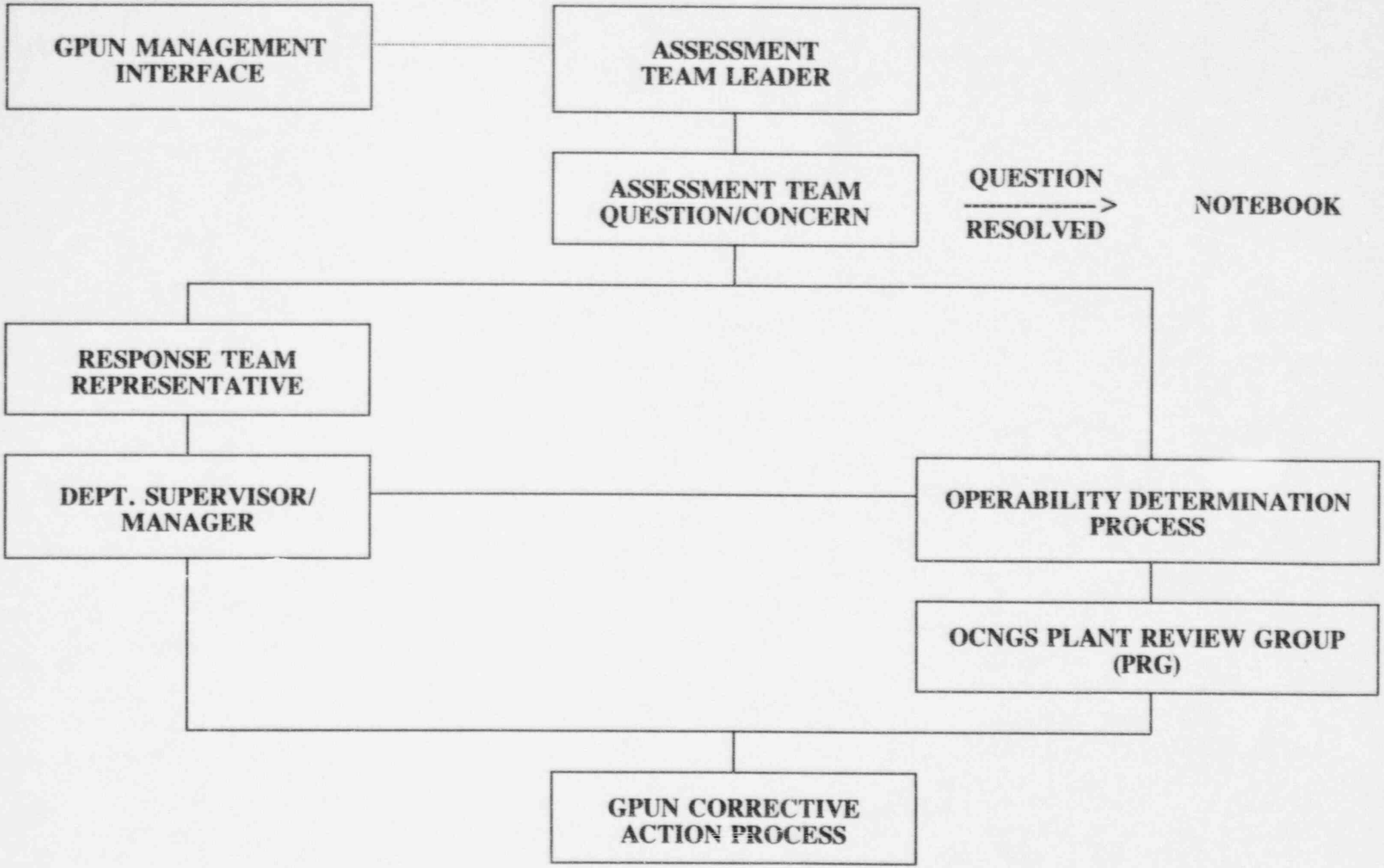
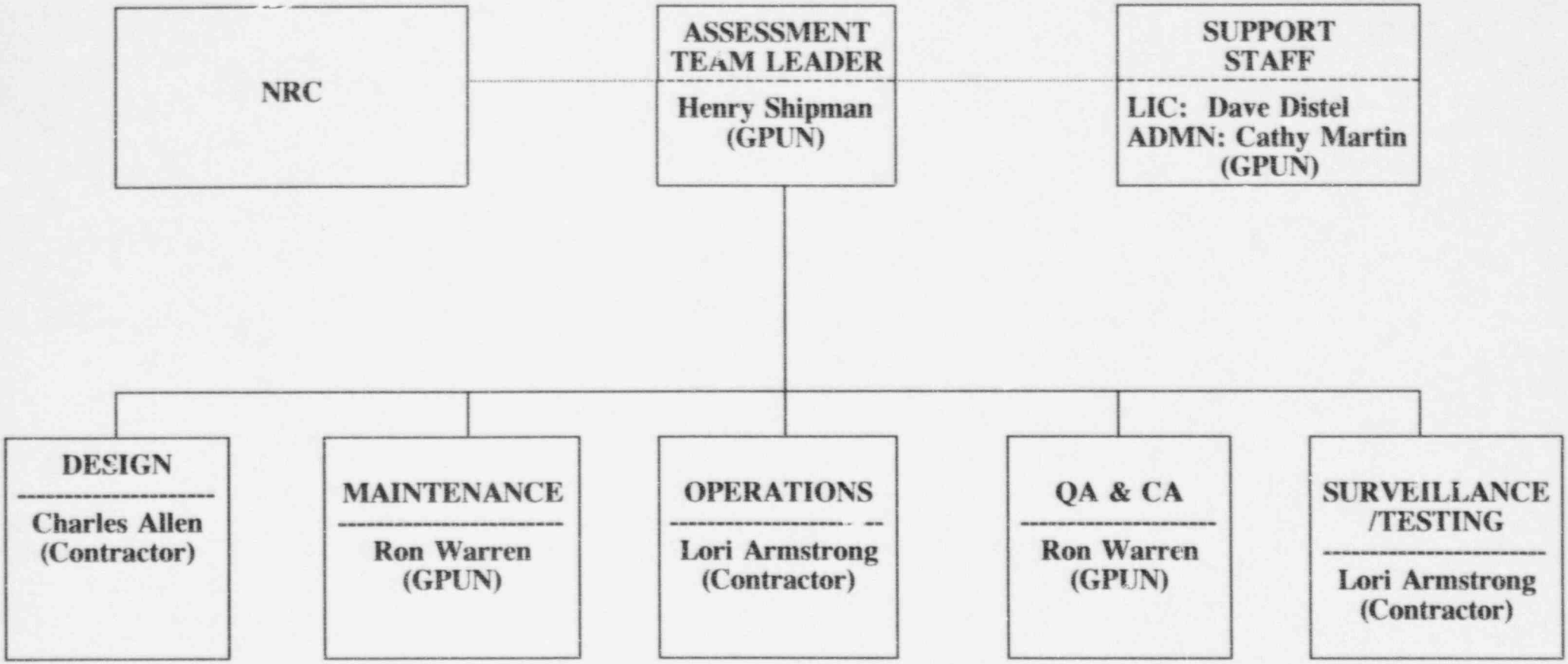


FIGURE 2
OCNGS SWSOPI SELF-ASSESSMENT TEAM ORGANIZATION



ATTACHMENT A. OCNGS REDUCED-SCOPE SWSOPI 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, in specific areas not addressed by the SSFI and where appropriate based on the SSFI findings.	
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 in the areas not addressed by the SSFI and where appropriate based on the SSFI findings.	

2515/118-02 **BACKGROUND**

Previously identified SWS problems include: Inadequate heat removal capability, biofouling, silting, 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) **Reduced Scope Review:** Review to determine if system calculations are identified, reviewed, updated, and appropriately generated for plant modifications, determine conservativeness of calculational assumptions, determine that plant operating, surveillance, and test procedures reflect adequate transfer of design basis information, and evaluate instrument loop accuracy and setpoint calculations for consistency with other design documents.

STATUS:

a.(2) **Reduced Scope Review:** Determine if FSAR updates for SWS are accurate and timely, and include system limits, flow requirements, updated heat transfer analyses, and accurately reflects design basis criteria and analyses. Determine if IST limits and bases accurately reflect design and licensing basis.

STATUS:

a.(3) **Reduced Scope:** Adequately reviewed by SSFI.

STATUS: N/A

a.(4) **Reduced Scope Review:** Determine if procurement specifications are updated and are consistent with actual equipment design, construction, and engineering analyses.

STATUS:

b. **Reduced Scope:** Adequately reviewed by SSFI.

STATUS: N/A

c. **Reduced Scope Review:** Determine if design calculations adequately address operational conditions, including system throttling requirements and vendor requirements for component operation.

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:

e.(1) Review the effectiveness of any design features installed to minimize silting 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. **Reduced Scope Review:** Review system modifications since 1989. Determine if 50.59 evaluations are consistent with FSAR, Technical Specifications, and plant operational procedures. Determine if engineering packages supporting modifications have adequately identified, reviewed, and revised as necessary existing system calculations. Determine if temporary and permanent system modifications have been adequately factored into operational procedures and training.

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:

03.02 **OPERATIONS**

a. **Reduced Scope:** Adequately by reviewed by SSFI.

STATUS: N/A

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. **Reduced Scope Review:** Review to ensure that training manual and lesson plans reflect permanent and temporary system modifications and that 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. **Reduced Scope:** Adequately reviewed by SSFI.

STATUS: N/A

f. **Reduced Scope:** Adequately reviewed by SSFI.

STATUS: N/A

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. **Reduced Scope:** Adequately reviewed by SSFI.

STATUS: N/A

b. If possible, witness maintenance performed on SWS. Review package prep and observe QC involvement.

STATUS:

c. **Reduced Scope:** Adequately reviewed by SSFI.

STATUS: N/A

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. **Reduced Scope Review:** 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. **Reduced Scope:** Adequately reviewed by SSFI.

STATUS: N/A

h. **Reduced Scope**: Adequately reviewed by SSFI.

STATUS: N/A

i. Review the periodic inspection program used to detect corrosion, erosion, protective coating failure, silting and biofouling.

STATUS:

03.04 **SURVEILLANCE AND TESTING**

a. **Reduced Scope Review**: Review and evaluate technical adequacy of technical specification surveillance procedures and IST procedures.

STATUS:

b. **Reduced Scope Review**: Review to verify that overall system surveillance is adequate to verify SWS heat removal capacity. Determine if IST acceptance criteria accurately reflects design basis requirements.

STATUS:

c. **Reduced Scope:** Adequately reviewed by SSFI.

STATUS: N/A

d. **Reduced Scope:** Adequately reviewed by SSFI.

STATUS: N/A

e. **Reduced Scope Review:** Review IST records for pumps and valves in the SWS with emphasis on trending of IST results. Reviews to determine inclusion of required IST components of the SWS and support systems.

STATUS:

f. **Reduced Scope:** Adequately reviewed by SSFI.

STATUS: N/A

g. **Reduced Scope:** Adequately reviewed by SSFI.

STATUS: N/A

h. Review procedures for periodic testing of safety-related heat exchanger heat transfer capability and the trending of such results.

STATUS:

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, 10 CFR 50.72 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:

EXAMPLE

Attachment B - Service Water Syst m Self-Assessment

Question/Response Form

Question No. _____

Date/Time: _____

Team Member: _____

Subject Area: _____

Question/Request:

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GPUN Response Assigned to: _____ GPUN Response Date: _____

GPUN Response:

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