1982 Evaluation

Millstone Nuclear Power Station

Northeast Utilities

INPO

EVALUATION

of

MILLSTONE NUCLEAR POWER STATION

Northeast Utilities

March 1983

SUMMARY

INTRODUCTION

The Institute of Nuclear Power Operations (INPO) conducted an evaluation of Northeast Utilities' (NU) Millstone Nuclear Power Station, Units 1 and 2, during the weeks of December 6 and 13, 1982. Unit 1 is a 660-MWe (net) General Electric boiling water reactor. Unit 2 is an 870-MWe (net) Combustion Engineering pressurized water reactor. The station is located on the north shore of Long Island Sound in Waterford, Connecticut. Unit 1 began commercial operation in March 1971, and Unit 2 in December 1975.

PURPOSE AND SCOPE

INPO conducted an evaluation of site activities to make an overall determination of plant safety, to evaluate management systems and controls, and to identify areas needing improvement. Information was assembled from discussions, interviews, observations, and reviews of documentation.

The INPO evaluation team examined station organization and administration, operations, maintenance, technical support, training and qualification, radiological protection, and chemistry. The team also observed the actual performance of selected evolutions and surveillance testing. As a basis for the evaluation, INPO used performance objectives and criteria relevant to each of the areas examined; these were applied and evaluated in light of the experience of team members, INPO's observations, and good practices within the industry.

INPO's goal is to assist member utilities in achieving the highest standards of excellence in nuclear plant operation. The recommendations in each area are based on best practices, rather than minimum acceptable standards or requirements. Accordingly, areas where improvements are recommended are not necessarily indicative of unsatisfactory performance.

DETERMINATION

Within the scope of this evaluation, the team determined that the plant is being safely operated by well qualified personnel.

The following beneficial practices and accomplishments were noted:

The good morale and professional attitude of the plant staff are evident.

The interest and attention of the corporate staff are also evident.

The station has developed and implemented a comprehensive ALARA program especially in the areas of job planning and engineering design practices for reducing personnel radiation exposures on major jobs.

The station engineering staff is well qualified and provides strong support in the operation and maintenance of both units.

Improvements were recommended in a number of areas. The following is considered to be among the most important:

Compliance with station radiological protection requirements needs improvement.

In each of the areas evaluated, INPO has established PERFORMANCE OBJECTIVES and supporting criteria. All PERFORMANCE OBJECTIVES reviewed during the course of this evaluation are listed in APPENDIX II.

Findings and recommendations are listed under the PERFORMANCE OBJECTIVES to which they pertain. Particularly noteworthy conditions that contribute to meeting PERFORMANCE OBJECTIVES are identified as Good Practices. Other findings describe conditions that detract from meeting the PERFORMANCE OBJECTIVES. It would not be productive to list as Good Practices those things that are commonly done properly in the industry since this would be of no benefit to Northeast Utilities or to INPO's other member utilities. As a result, most of the findings highlight conditions that need improvement.

The recommendations following each finding are intended to assist the utility in ongoing efforts to improve all aspects of its nuclear programs. In addressing these findings and recommendations, the utility should, in addition to correcting or improving specific conditions, pursue underlying causes and issues.

As a part of the second and succeeding evaluations of each station, the evaluation team will follow up on responses to findings in previous reports. Findings with response actions scheduled for future completion have been carried forward in APPENDIX I to this report. In areas where additional improvements were needed, a new finding that stands on its own merit has been written. Thus, this report stands alone, and reference to previous evaluation reports should not be necessary.

The findings listed herein were presented to Northeast Utilities management at an exit meeting on December 16, 1982. Findings, recommendations, and responses were reviewed with Northeast Utilities management on January 26, 1983. Responses are considered satisfactory.

To follow the timely completion of the improvements included in the responses, INPO requests a written status by September 30, 1983. Additionally, a final update will be requested six weeks prior to the next evaluation.

The evaluation staff appreciates the cooperation received from all levels of Northeast Utilities.

NORTHEAST UTILITIES

Response Summary

Northeast Utilities (NU) and its nuclear operating company, Northeast Nuclear Energy Company (NNECo), share INPO's interest in achieving the highest standard of excellence in the operation of the Millstone Nuclear Power Station and believe that INPO's second evaluation will assist NNECo in achieving and maintaining that performance level. NNECo has evaluated each of INPO's recommendations and will take appropriate corrective action as outlined in the NNECo response that follows each recommendation. Additionally, NNECo will pursue any underlying causes and issues that may have contributed to the finding and take corrective actions as deemed necessary.

NNECo acknowledges that additional improvements are needed to ensure full compliance with station radiological protection requirements, and additional emphasis will be placed on supervisory review of these activities to enforce station policies.

The specific responses provide target dates for the completion of planned corrective actions. NNECo will provide written status reports as requested in the INPO summary.

As in the past, NNECo will continue to evaluate for implementation INPO criteria, practices, guidelines, and reports as they are issued or revised. NNECo is confident that striving to meet INPO's "Performance Objectives" will result in an overall benefit to NNECo, the nuclear industry, and the public.

ORGANIZATION AND ADMINISTRATION

MISSION, GOALS, AND OBJECTIVES

PERFORMANCE OBJECTIVE: Station mission, goals, and objectives should be established and progress monitored through a formal program.

Finding (OA.2-1)

The following Good Practice was noted: The Management Planning and Performance Review Program provides an excellent means for establishing and monitoring station goals and objectives. Individual employee goals and objectives consistent with those of the overall station are established jointly by the employee and his supervisor. Periodic performance reviews are conducted to monitor employee progress. Progress toward achieving goals and objectives is a factor in determining adjustments in employee compensation.

OPERATIONS

OPERATIONS PROCEDURES AND DOCUMENTATION

PERFORMANCE OBJECTIVE: Operational procedures and documents should provide appropriate direction and should be effectively used to support safe operation of the plant.

Finding (OP.5-1)

Uncontrolled graphs, schematics, diagrams, and notes used as operator aids are posted throughout the plant, particularly in Unit 2. A method is needed to control and update these operator aids.

Recommendation

Review all posted operator aids for continued applicability, and remove those no longer required. Update and authorize those that need to remain posted. Document the posting of all operator aids so an effective review for continued applicability, accuracy, and authorization can be conducted. The number of posted operator aids should be minimized.

Response

Operator aids throughout the station will be controlled to ensure they are current, properly authorized, and those of a procedural nature minimized. Administrative Control Procedure ACP-QA-3.02, "Station Procedures and Forms," will be revised to provide this level of control. The ACP revision will be completed and in effect by July 1983.

OPERATIONS FACILITIES AND EQUIPMENT

PERFORMANCE OBJECTIVE: Operational facilities and equipment should effectively support plant operation.

Finding (OP.6-1)

Cleanliness and housekeeping need improvement in some areas of the plant. Areas needing improvement include the following:

a. Unit 1: turbine deck, shutdown cooling heat exchanger room, diesel fire pump room, and portions of the refueling floor

b. Unit 2: minus 25'6" and minus 45'6" levels of the auxiliary building (particularly the charging pump and safeguard rooms) and some areas of the fuel handling building

Recommendation

Continue to place emphasis on plant cleanliness and housekeeping. Particular attention should be given to areas identified.

Response

The station areas identified in the finding have received the necessary attention to meet station cleanliness and housekeeping requirements. It is felt that existing administrative controls are adequate to ensure station housekeeping and cleanliness are maintained at a level that provides a safe work environment free from unnecessary fire hazards. However, periodic inspections will be conducted in less frequently traveled, accessible areas to ensure that expected levels of cleanliness are maintained.

Finding
(OP.6-2)

Many valves and components in the plant are not identified with clear, permanent, and distinguishable labels. Some labels were not attached to their respective valves or components. Some labels could not be read due to deterioration.

Recommendation

Inspect plant systems to identify and correct current labeling deficiencies. Emphasize to all operators the importance of maintaining plant labeling and correcting inadequacies.

Response

An inspection of accessible plant systems will be conducted to determine those valves that are not identified with clear, permanent, and distinguishable labels. Deficiencies noted will be corrected by December 1983. Plant systems presently inaccessible will be inspected, and valve labeling deficiencies will be corrected at the first convenient opportunity. Additionally, where there is a need to identify components and instruments because of known or potential operating or maintenance problems, action will be taken to clearly identify the component or instrument with permanent labeling. The present program of reviewing each system's labeling during the biennial procedure review will continue to ensure the above standards are maintained. In addition, station personnel will be directed to document or report labeling defiencies to the Operations Department in a timely manner for correction.

MAINTENANCE

WORK CONTROL SYSTEM

PERFORMANCE OBJECTIVE: The control of work should ensure that identified maintenance actions are properly completed in a safe, timely, and efficient manner.

Finding (MA.3-1)

The following Good Practice was noted: The Production Maintenance Management System Coordinator maintains a list of items to be accomplished during short-term, unscheduled outages. This list provides information for the work supervisor to more effectively plan work for unscheduled outages. The number of items is kept small to ensure manageability.

CONDUCT OF MAINTENANCE

PERFORMANCE OBJECTIVE: Maintenance should be conducted in a manner that ensures efficient and effective plant operation.

Finding (MA.4-1)

More effective supervision and coordination are needed to ensure that outside contractors adhere to plant procedures and good maintenance practices. Problems involving contractor work were noted in the control of hot work such as welding and grinding, the control of weld rods, and job site cleanup.

Recommendation

Increase the monitoring and control of contractor work by station personnel. Improve compliance with existing station practices for hot work, and follow up after job completion to ensure that tools and material have been removed from work areas.

Response

Additional emphasis will be placed on supervision and coordination of outside contractors to ensure compliance with existing administrative controls. Additionally, increased monitoring by both station personnel and Northeast Utilities Service Company Betterment Construction personnel will promote good work practices.

PREVENTIVE MAINTENANCE

PERFORMANCE OBJECTIVE: The preventive maintenance programs should contribute to optimum performance and reliability of plant equipment.

Finding (MA.5-1)

The preventive maintenance (PM) program needs improvement. Specific problem areas are as follows:

a. The existing program does not include some operating equipment important to the safety and reliability of the plant.

b. Administrative guidance for the Unit 1 instrument and control PM program has not been provided.

Recommendation

Determine which additional operating equipment should be included in the PM program because of its importance to plant safety and reliability, and add those items to the program. Provide administrative guidance for the Unit 1 instrument and control PM program.

Response

Existing PM programs will be reviewed to determine which additional operating equipment, important to safety and reliability, should be added to the program. Review and revision of the PM programs will be complete by December 1983.

A procedure to provide administrative guidance for the Unit 1 instrument and control PM program is presently being drafted. This procedure will be implemented by June 1983.

MAINTENANCE HISTORY

PERFORMANCE OBJECTIVE: The maintenance history should be used to support maintenance activities and optimize equipment performance.

Finding (MA.7-1)

Unit 1 maintenance history documentation needs improvement. Most history record entries have not been made for approximately six months. Some pertinent information is presently not being included in history records. Some major equipment overhauls, modifications, and component replacements accomplished over the past 20 months were not recorded in maintenance history records.

Recommendation

Improve maintenance history documentation practices to ensure that history records contain sufficient information to support

meaningful evaluation of equipment repairs, modifications, replacements, and performance. Ensure that maintenance history is utilized to make preventive maintenance program adjustments, initiate design modifications, revise operating practices, and revise training programs.

Response Northeast Utilities is implementing a Production Maintenance Management System (PMMS). PMMS will incorporate an improved machinery history data base and will be used to make PM program adjustments, initiate design changes, revise current practices, and revise training programs. In the interim, specific assignments will be made to update and maintain the existing program. The existing program will be current by August 1983.

MAINTENANCE FACILITIES AND EQUIPMENT

PERFORMANCE OBJECTIVE: **Facilities and equipment should effectively support the performance of maintenance activities.**

Finding (MA.8-1) **Some parts and materials in the warehouse are not routinely monitored to ensure quality.** For example, controls for limited shelf life items have not been established. Large motors and pumps are not scheduled for preventive maintenance.

Recommendation Evaluate material storage practices to ensure quality of parts and material until they are issued. Emphasis should be given to periodic servicing of stored equipment and control of limited shelf life items.

Response Category I spare parts are checked for shelf life as part of receipt inspection. Critical parts identified as having a shelf life are reordered as necessary. Presently, there is no formal program to routinely monitor other items in the warehouse for shelf life. However, administrative controls will be formally established by April 1983 to ensure expired shelf life parts are not issued without appropriate technical review and approval.

A formal preventive maintenance evaluation for Category I spare parts is made during receipt inspection. Items requiring preventive maintenance are identified to the appropriate department and added to the preventive maintenance program. An inspection will be conducted to determine if any non-Category I equipment stored in the warehouse should be added to the preventive maintenance program. This inspection and necessary preventive maintenance program additions will be completed by May 1983.

Finding (MA.8-2)

Weld repair and fabrication activities need improvement. Problem areas include the following:

a. Some unused low hydrogen welding electrodes were not stored in ovens or sealed containers.

b. Electrodes that had been placed on oily machinery surfaces were used on an instrument air piping modification.

c. There are no procedures and documentation pertaining to weld filler materials for non-Category I systems and components.

d. The maintenance shop welding electrode storage oven and the station welding electrode portable ovens were not checked for proper temperature on a periodic basis.

Recommendation

Improve welding and fabrication activities with special emphasis on control of electrodes. Take steps to preclude hydrogen entrapment and oil contamination of low hydrogen electrodes. Review existing procedures and practices to ensure appropriate temperatures are maintained for both portable and fixed storage electrode ovens. An example of approved guidance is American Welding Society (AWS) D.1.1, Part B, 1982 edition.

Response

A review of existing administrative control procedures governing welding activities will be conducted. Changes necessary to preclude the use of uncontrolled weld material in code-related, non-Category I and Category I weld activities will be implemented.

All weld rod storage ovens (portable and fixed) will be incorporated into the applicable department preventive maintenance program to ensure appropriate temperatures are maintained in accordance with current ASME code requirements.

Corrective actions will be completed by December 1983.

TECHNICAL SUPPORT

TECHNICAL SUPPORT ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: The technical support organization and administrative systems should ensure effective control and implementation of department activities.

Finding (TS.1-1)

The following Good Practice was noted: Each engineering department has an effective and comprehensive career development program. The program includes formal plans for each engineer, supporting corporate programs, and documented training records.

SURVEILLANCE TESTING PROGRAMS

PERFORMANCE OBJECTIVE: Surveillance inspection and testing activities should provide assurance that equipment important to safe and reliable plant operation will perform within required limits.

Finding (TS.2-1)

The following Good Practice was noted: Comprehensive surveillance inspection and testing programs have been developed and implemented to ensure that equipment important to safe and reliable plant operation will perform within required limits. The programs are utilized on both primary and secondary components using acoustical spectrum analysis as a diagnostic tool. Spectrum analysis has been successful in identifying impending bearing failures, permitting planned corrective measures.

OPERATING EXPERIENCE REVIEW PROGRAM

PERFORMANCE OBJECTIVE: Industrywide and in-house operating experiences should be evaluated and appropriate actions undertaken to improve plant safety and reliability.

SOER STATUS

The status of Significant Operating Experience Report (SOER) recommendations is as follows:

Number of Recommendations	Action Taken
120	Satisfactory
0	Not applicable
30	Pending
0	Further review needed

The following recommendations are pending action:

SOER Number	Recommendation Number
81-6	2
81-12	3, 4b
81-15	1a, 1b, 1c
82-1	2a, 2b, 2c, 2d, 3
82-2	1, 2, 3, 4, 5, 6, 7
82-5	1, 2, 3, 4, 5, 6
82-6	1, 2a, 2b, 3, 4, 5

An update on the status of each recommendation listed in the "pending action" category shown above is requested in the six-month follow-up response to this report. In addition, the status of each immediate action (red tab) SOER recommendation received subsequent to this evaluation should be included in the six-month follow-up response. A tabular summary, similar to that above, is requested.

PLANT MODIFICATIONS

PERFORMANCE OBJECTIVE: Plant modification programs should ensure proper review, control, implementation, and completion of plant design changes in a safe and timely manner.

Finding (TS.4-1)

Control room drawings identified as "operations critical" are not always updated prior to returning modified systems to service. It is recognized that the station procedure for design change control (ACP-QA-3.04) is being revised to require "operations critical" drawing markup (red line) before modified systems are returned to service.

Recommendation Implement controls to require that "operations critical" drawings are marked-up to show the as-built condition prior to returning modified systems to service.

Response The corporate procedure regarding design change control is presently being revised. This revision will include requirements regarding update of "operations critical" drawings. Station procedures implementing the corporate procedure will specifically designate responsibilities for updating "operations critical" drawings prior to returning modified systems to service. It is expected that station procedures will be implemented by June 1983.

Finding (TS.4-2) **Temporary jumpers and lifted leads do not routinely receive a technical design review prior to or shortly after placing modified systems in service.**

Recommendation Implement administrative controls for jumpers and lifted leads to require that a technical design review be performed prior to or shortly after placing modified systems in service. The review should be consistent with the reviews performed for plant design change requests.

Response Appropriate administrative control procedure changes will be made to require a technical review, by the shift supervisor and operations supervisor/duty officer, of jumpers and lifted leads prior to placing the affected system in service. This program will be implemented by June 1983.

REACTOR ENGINEERING

PERFORMANCE OBJECTIVE: On-site reactor engineering activities should ensure optimum nuclear reactor operation without compromising design or safety limits.

Finding (TS.5-1) **The following Good Practice was noted: Effective fuel management programs have been developed and implemented to enhance nuclear reactor operation.** Important reactor parameters are monitored routinely. The results are analyzed and corrective actions are taken to enhance reactor performance. Computer programs are updated, verified, and controlled to avoid unauthorized changes. The effectiveness of these programs is a result of close coordination and communication between plant, fuel manufacturer, and corporate engineering personnel.

PLANT EFFICIENCY AND RELIABILITY MONITORING

PERFORMANCE OBJECTIVE: Performance monitoring activities should optimize plant thermal performance and reliability.

Finding (TS.6-1)

The following Good Practice was noted: An effective thermal efficiency and reliability program has been developed and implemented to monitor the performance of critical plant systems. Monitoring results are trended and analyzed. Analyses have been successful in improving the thermal efficiency of several plant systems. Corporate engineering support is a key element in the effectiveness of this program.

TRAINING AND QUALIFICATION

MAINTENANCE PERSONNEL TRAINING AND QUALIFICATION

PERFORMANCE OBJECTIVE: The maintenance personnel training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions.

Finding (TQ.5-1)

Structured training programs need to be developed and implemented for mechanical, electrical, and instrumentation and controls maintenance personnel. The existing training does not uniformally prepare trainees to perform tasks required for their positions. It is recognized that needs analysis and manpower studies have been completed for these programs.

Recommendation

Develop and implement structured training and qualification programs for mechanical, electrical, and instrumentation and controls personnel. These programs should include initial classroom and on-the-job training (OJT). Structured OJT should include the following:

a. identification of tasks to be performed, simulated, or discussed

b. identification of individuals or classifications of individuals qualified and responsible for conducting OJT

c. skill and knowledge required for each identified task to be performed, simulated, or discussed

d. identification of individuals or classifications of individuals qualified and responsible for conducting final checkouts

e. assurance that the individual has demonstrated competency in specified tasks prior to job assignment

These programs should also include continuing training that should entail the following:

a. a periodic review of selected fundamentals

b. training on procedural changes and system/equipment modifications

c. timely training of job-related problem areas and relevant station and industry operating experience

d. specialized training

INPO Good Practice TQ-501, "Development and Implementation of On-The-Job Training Programs," could be of assistance in this effort.

Response

Short-term training needs for mechanical, electrical, and instrumentation and control personnel have been identified by the applicable department heads and Training Department staff. Training has begun for Unit 2 instrumentation and control personnel with satisfactory results to date. The remainder of the programs will begin by March 1983. In addition, long-range planning is in progress for maintenance and instrumentation and control training programs.

On-the-job training is presently being accomplished by all the aforementioned departments. However, this training is informal and lacks documentation. A formal on-the-job training program is described in Administrative Control Procedure 8.25, "Technical Training Program," and will be addressed during 1983, including an evaluation of other utility on-the-job training programs and INPO Good Practice TQ-501.

Continuing training programs as discussed in the recommendation will be developed following commencement of initial training programs. The status of this effort will be provided in the six-month report.

RADIOLOGICAL PROTECTION

RADIOLOGICAL PROTECTION ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: The organization and administrative systems should ensure effective control and implementation of the radiological protection program.

Finding (RP.1-1)

Station and contractor personnel frequently do not comply with station radiological protection requirements and procedures. Plant supervision does not always enforce radiological protection rules.

Recommendation

Increase supervisory review of routine operations and maintenance activities to identify and correct poor performance in radiological protection. Place more emphasis on compliance with radiological protection requirements in initial and continuing general employee training.

Response

Station and contractor supervisors have been directed to inspect and observe radiological work areas to ensure compliance with established radiation protection rules and procedures by personnel. More emphasis will be placed on compliance with radiation protection rules and procedures during general employee training and retraining. Retraining of station personnel will be completed by December 1983.

EXTERNAL RADIATION EXPOSURE

PERFORMANCE OBJECTIVE: External radiation exposure controls should minimize personnel radiation exposure.

Finding (RP.4-1)

The following Good Practice was noted: The station has a comprehensive and effective ALARA program that has reduced worker radiation exposures. Emphasis is placed upon both design and operational methods of reducing personnel exposures. Extensive reviews of major radiological conditions are conducted and documented in order to improve future performance.

INTERNAL RADIATION EXPOSURE

PERFORMANCE OBJECTIVE: Internal radiation exposure controls should minimize internal exposures.

Finding (RP.5-1) **Personnel eat, smoke, and drink in potentially contaminated areas of the station.** Signs have been posted prohibiting eating, drinking, and smoking in these areas, but these rules are not observed.

Recommendation Emphasize and strictly enforce station policy concerning eating, drinking, and smoking in potentially contaminated areas.

Response Additional emphasis is being placed on station and contractor supervision to monitor station areas to ensure compliance by personnel with eating, smoking, and drinking restrictions. Radiologically controlled areas are being evaluated to determine whether existing signs are adequate. This evaluation will be completed by March 1983, and additional signs, if needed, will be posted by June 1983.

PERSONNEL DOSIMETRY

PERFORMANCE OBJECTIVE: The personnel dosimetry program should ensure that radiation exposures are accurately determined and recorded.

Finding (RP.8-1) **Extremity dosimetry is not used in some situations where exposure to a worker's extremities may be much higher than that received by the whole body.**

Recommendation Measure extremity exposures in work evolutions such as chemistry sampling and analysis and in decontamination of highly contaminated parts under water. Determine whether unrecorded exposures to the extremities in excess of whole-body exposures are occurring and increase use of extremity dosimetry as appropriate.

Response The current extremity monitoring program has been reviewed for specific Radiation Work Permits (RWPs) and found to be adequate. The extremity monitoring program for blanket RWPs is being reviewed. Appropriate station procedures will be revised, if required, by May 1983.

RADIOACTIVE CONTAMINATION CONTROL

PERFORMANCE OBJECTIVE: Radioactive contamination controls should minimize the contamination of areas, equipment, and personnel.

Finding (RP.9-1)	**Skin and internal personnel contaminations are not evaluated to determine generic or root causes.** Corrective actions are generally limited to addressing each separate occurrence.
Recommendation	Expand the scope of current evaluations of skin contaminations to identify generic problems, and factor results into worker training programs. Formally trend internal personnel contaminations.
Response	Quarterly reports issued in the future will contain a summary that will trend the contamination incidents and identify generic or root causes. Both external and internal contamination results will be trended and used to modify station radiological protection procedures and training programs if necessary.

CHEMISTRY

CHEMISTRY ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: The organization and administrative systems should ensure effective implementation and control of the chemistry program.

Finding (CY.1-1)

Improvements are needed in the control of cleaning agents and solvents. Specific areas needing improvement include the following:

a. The approved station solvents list is out of date and includes several potentially hazardous solvents.

b. Unauthorized and potentially hazardous solvents were observed in the station.

Recommendation

The solvent control procedure should be reviewed to determine the adequacy of acceptance criteria. The station solvents list should be revised to eliminate potentially hazardous solvents or provide adequate controls to prevent unauthorized use. Only solvents and cleaning agents that are on the approved list should be used in the station, or adequate control should be established to prevent unauthorized use. Other solvents and cleaning agents should be removed.

Response

Millstone Administrative Policy MAP 5.08, "Control of Solvents," and Station Form SF 608 will be reviewed and revised as required. Additionally, a memorandum will be sent to all work functions on site reiterating the station solvent control procedure as described in MAP 5.08. A site inspection will be performed in March 1983 to ensure that unauthorized cleaning agents and solvents have been removed.

Millstone Administrative Policy MAP 2.07, "Major Outage Preparation," will be revised to include reference to the station solvent control program by June 1983.

LABORATORY ACTIVITIES

PERFORMANCE OBJECTIVE: Laboratory and counting room activities should ensure accurate measuring and reporting of chemistry parameters.

Finding (CY.4-1)

The quality control program for the chemistry laboratory needs to be improved to ensure that analyses are performed with the required degree of accuracy. Problems noted include the following:

a. The shelf life program is not completely implemented. Reagents, standards, and chemicals were found with expired shelf lives.

b. Technicians do not periodically analyze spiked samples for all required analyses. The spiked sample program does not include some important analyses such as silica, sodium, iron, and copper.

c. There is no conductivity cell on the outlet of the demineralized water supply used for the preparation of reagents and standards.

d. When performing analyses on the spectrophotometer, standards are not routinely analyzed along with the analyses to verify calibration curves.

Recommendation

Improve the chemistry quality control program to increase assurance that analyses are accurately performed. Include the above noted problem areas in this improvement.

Response

Problems with the shelf life program were previously identified and Chemistry Procedure CP 800/2800, "Chemistry Department Quality Assurance Program," was being reviewed and revised. This revision includes an improved shelf life program, an expanded spiked sample program, and a defined period for all spiked sample analyses.

The chemistry procedure for the spectrophotometer will be revised to include a routine standard check of the calibration curves.

A reagent-grade water monitoring system will be installed.

All of the above actions will be complete by July 1983.

Finding (CY.4-2) **The methods used for the analysis of chlorides and feedwater metals in Unit 2 are not sufficiently sensitive to accurately measure the concentrations at the limits specified in plant procedures.**

Recommendation Continue with plans to develop new methods to analyze for chlorides and trace metals at the levels specified in plant procedures.

Response This problem was identified previously and has resulted in the purchase of a polargraphic titrator for low level chloride analysis. This equipment is currently undergoing pre-operational testing. Operating procedures and training will be developed and completed. The method used to analyze for trace metals will be evaluated, and a method with the required sensitivities will be adopted. These actions will be complete by December 1983.

CHEMICAL AND LABORATORY SAFETY

PERFORMANCE OBJECTIVE: Work practices associated with chemistry activities should ensure the safety of personnel.

Finding (CY.5-1) **Incompatible chemicals such as acids, bases, and perchloric acid are stored together in the chemistry laboratory and warehouse storeroom.**

Recommendation Store acids and bases separately in cabinets designed for corrosive chemicals. Consider discontinuing the use of perchloric acid.

Response Large volumes of concentrated acids and bases have been and will continue to be stored separately in cabinets designed for corrosive chemicals. The Chemistry Department is currently investigating alternates for perchloric acid. If a suitable replacement is found, the use of perchloric acid will be discontinued. The Chemistry Department will perform an evaluation of the small volumes of chemicals stored at each analysis station in the chemistry laboratory to determine if any significant hazards exist. All of these actions will be completed by June 1983.

APPENDIX I

Summary of Outstanding Response Action from Previous Evaluation (1981)

MAINTENANCE PERSONNEL TRAINING

Finding (TQ.8-1)

A maintenance training plan (mechanical, electrical, and instrumentation and control (I&C) areas) defining the responsibilities of the training group needs to be developed. Current training group efforts to develop integrated maintenance training programs are hampered by the absence of an overall plan.

Recommendation

Develop an overall maintenance training plan (including I&C, mechanical, and electrical) that addresses program goals, content, implementing practices, and responsibility assignments. The plan should describe both current activities and long-range program development. INPO guidelines, "Nuclear Power Plant Technical Personnel - Mechanical Maintenance Personnel Qualification" (GPG-05), "Electrical Maintenance Personnel Qualification" (GPG-07), and "Instrument and Control Technician Qualification" (GPG-08), could be of assistance in this area.

Response

An overall Maintenance Training Plan (I&C, mechanical and electrical) will be developed to meet the station needs. Millstone will evaluate the INPO guidelines in the area of maintenance training and incorporate them as appropriate into the program. Program development will be complete by July 1982.

Status

The INPO guidelines have been evaluated, and a proposed plan that will meet Millstone's needs is currently undergoing a review by station management. This proposed plan defines the responsibilities of the Training Department and provides a framework within which maintenance training programs can be developed. The development and implementation of the maintenance training plan will be completed by April 1983.

RADIOLOGICAL PROTECTION TRAINING

Finding (RC.2-1)

Health physics technician training needs improvement in the area of plant systems. Retraining is currently limited to procedure review.

Recommendation

Expand the initial training for health physics technicians to include plant systems. The annual health physics technician retraining program should address operation of new equipment, highlights of the initial training program, and recurring problems which have been identified by health physics supervision.

Response The Health Physics Technician Training and Retraining Programs will be expanded to include INPO's recommendations by July 1982.

Status Initial training for health physics technicians in plant systems has been provided. The corporate radiological assessment branch and the station are in the process of developing a periodic system training course for health physics technicians. This course will be developed and implemented by April 1983.

APPENDIX II

Performance Objectives Reviewed

ORGANIZATION AND ADMINISTRATION

OA.1 Station Organization and Administration

Station organization and administrative systems should ensure effective implementation and control of station activities.

OA.2 Mission, Goals, and Objectives

Station mission, goals, and objectives should be established and progress monitored through a formal program.

OA.3.1 Management Assessment

Management should assess and monitor station activities to ensure effective performance of all aspects of nuclear plant operation.

OA.3.2 Quality Programs

Quality programs should ensure the effective performance of activities important to nuclear safety.

OA.4 Personnel Planning and Qualification

Personnel programs should ensure that station positions are filled by individuals with proper job qualifications.

OA.5 Industrial Safety

Station industrial safety programs should achieve a high degree of personnel safety.

OA.6 Document Control

Document control systems should provide correct, readily accessible information to support station requirements.

OA.7 On-site Nuclear Safety Review Committee

Review of station nuclear activities by a knowledgeable interdisciplinary group should ensure achievement of a high degree of nuclear safety.

OPERATIONS

OP.1 Operations Organization and Administration

The operations organization and administrative systems should ensure effective control and implementation of department activities.

OP.2 Conduct of Operations

Operational activities should be conducted in a manner that achieves safe and reliable plant operation.

OP.3 Plant Status Controls

Operational personnel should be cognizant of the status of plant systems and equipment under their control, and should ensure that systems and equipment are controlled in a manner that supports safe and reliable operation.

OP.4 Operations Knowledge and Performance

Operator knowledge and performance should support safe and reliable plant operation.

OP.5 Operations Procedures and Documentation

Operational procedures and documents should provide appropriate direction and should be effectively used to support safe operation of the plant.

OP.6 Operations Facilities and Equipment

Operational facilities and equipment should effectively support plant operation.

MAINTENANCE

MA.1 Maintenance Organization and Administration

The maintenance organization and administrative systems should ensure effective control and implementation of department activities.

MA.2 Plant Material Condition

The material condition of the plant should be maintained to support safe and reliable plant operation.

MA.3 Work Control System

The control of work should ensure that identified maintenance actions are properly completed in a safe, timely, and efficient manner.

MA.4 Conduct of Maintenance

Maintenance should be conducted in a manner that ensures efficient and effective plant operation.

MA.5 Preventive Maintenance

The preventive maintenance programs should contribute to optimum performance and reliability of plant equipment.

MA.6 Maintenance Procedures and Documentation

Maintenance procedures should provide appropriate directions for work and should be used to ensure that maintenance is performed safely and efficiently.

MA.7 Maintenance History

The maintenance history should be used to support maintenance activities and optimize equipment performance.

MA.8 Maintenance Facilities and Equipment

Facilities and equipment should effectively support the performance of maintenance activities.

TECHNICAL SUPPORT

TS.1 Technical Support Organization and Administration

The technical support organization and administrative systems should ensure effective control and implementation of department activities.

TS.2 Surveillance Testing Program

Surveillance inspection and testing activities should provide assurance that equipment important to safe and reliable plant operation will perform within required limits.

TS.3 Operations Experience Review Program

Industrywide and in-house operating experiences should be evaluated and appropriate actions undertaken to improve plant safety and reliability.

TS.4 Plant Modifications

Plant modification programs should ensure proper review, control, implementation, and completion of plant design changes in a safe and timely manner.

TS.5 Reactor Engineering

On-site reactor engineering activities should ensure optimum nuclear reactor operation without compromising design or safety limits.

TS.6 Plant Efficiency and Reliability Monitoring

Performance monitoring activities should optimize plant thermal performance and reliability.

TS.7 Technical Support Procedures and Documentation

Technical support procedures and documents should provide appropriate direction and should be effectively used to support safe operation of the plant.

TRAINING AND QUALIFICATION

TQ.1 Training Organization and Administration

The training organization and administrative systems should ensure effective control and implementation of training activities.

TQ.2 Non-Licensed Operator Training and Qualification

The non-licensed operator training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions.

TQ.3 Licensed Operator Training and Qualification

The licensed operator training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions.

TQ.4 Shift Technical Advisor Training and Qualification

The shift technical advisor training program should develop and improve the knowledge and skills to perform assigned job functions.

TQ.5 Maintenance Personnel Training and Qualification

The maintenance personnel training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions.

TQ.6 Technical Training for Managers and Engineers

The technical training program for engineers and managers should broaden overall knowledge of plant processes and equipment as a supplement to position-specific education and training.

TQ.7 General Employee Training

The general employee training program should develop a broad understanding of employee responsibilities and safe work practices.

TQ.8 Training Facilities and Equipment

The training facilities, equipment, and materials should effectively support training activities.

RADIOLOGICAL PROTECTION

RP.1 Radiological Protection Organization and Administration

The organization and administrative systems should ensure effective control and implementation of the radiological protection program.

RP.2 Radiological Protection Personnel Qualification

The radiological protection qualification program should ensure that radiological protection personnel have the knowledge and practical abilities necessary to effectively implement radiological protection practices.

RP.3 General Employee Training In Radiological Protection

General employee training should ensure that plant personnel, contractors, and visitors have the knowledge and practical abilities necessary to effectively implement radiological protection practices associated with their work.

RP.4 External Radiation Exposure

External radiation exposure controls should minimize personnel radiation exposure.

RP.5 Internal Radiation Exposure

Internal radiation exposure controls should minimize internal exposures.

RP.6 Radioactive Effluents

Radioactive effluent controls should minimize radioactive materials released to the environment.

RP.7 Solid Radioactive Waste

Solid radioactive waste controls should minimize the volume of radioactive waste and ensure safe transportation of radioactive material.

RP.8 Personnel Dosimetry

The personnel dosimetry program should ensure that radiation exposures are accurately determined and recorded.

RP.9 Radioactive Contamination Control

Radioactive contamination controls should minimize the contamination of areas, equipment, and personnel.

CHEMISTRY

CY.1 Chemistry Organization and Administration

The organization and administrative systems should ensure effective implementation and control of the chemistry program.

CY.2 Chemistry Personnel Qualification

The chemistry qualification program should ensure that chemistry personnel have the knowledge and practical abilities necessary to implement chemistry practices effectively.

CY.3 Chemistry Control

Chemistry controls should ensure optimum chemistry conditions during all phases of plant operation.

CY.4 Laboratory Activities

Laboratory and counting room activities should ensure accurate measuring and reporting of chemistry parameters.

CY.5 Chemical and Laboratory Safety

Work practices associated with chemistry activities should ensure the safety of personnel.