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February 20, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

NOTICE TO COMMISSION, APPEAL BOARD
LICENSING BOARD AND PARTIES

In the Matter of	)	
	)	
METROPOLITAN EDISON COMPANY	)	Docket No. 50-289 SP
	)	(Restart)
(Three Mile Island Nuclear Station, Unit No. 1)	)	

Enclosed for the information of the Commission, Appeal Board, Licensing Board and parties are copies of INPO's latest Evaluation of Three Mile Island Nuclear Power Station - Unit One. The report reflects INPO's evaluation at the end of October, 1984 and bears the date November, 1984; Licensee just received copies of the report from INPO.

The INPO determination (Report, at 2) is that:

> Based on this evaluation, the team found no reason that, when outage work in progress is completed, TMI-1 should not be ready to be operated safely. Within the scope of this evaluation, the team determined that TMI-1 is being maintained shut down in a safe manner by qualified personnel.

Included in INPO's evaluation is a section on licensed operator training and qualification. See Report at 21.

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Q PDR

INPO makes no findings or recommendations regarding licensed operator training, but particularly notes two areas of Good Practice.

Respectfully submitted,

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Enclosure
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NOVEMBER 1984 EVALUATION
RESTRICTED DISTRIBUTION

THREE MILE ISLAND NUCLEAR POWER STATION - UNIT ONE

GPU NUCLEAR CORPORATION

INPO

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EVALUATION

of

THREE MILE ISLAND NUCLEAR POWER STATION - UNIT ONE

GPU Nuclear Corporation

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November 1984

SUMMARY

The Institute of Nuclear Power Operations (INPO) conducted an evaluation of GPU Nuclear Corporation's Three Mile Island Nuclear Power Station Unit One (TMI-1) during the weeks of October 22 and 29, 1984. The station is located on Three Mile Island in the Susquehanna River about ten miles southeast of Harrisburg, Pennsylvania. The unit began commercial operation in September 1974 and has been shut down since February 1979.

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, chemistry, and emergency preparedness. The team also observed the actual performance of selected evolutions and surveillance testing. As a basis for the evaluation, INPO used its April 1983 Performance Objectives and Criteria for Plant Evaluations; 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.

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DETERMINATION

Based on this evaluation, the team found no reason that, when outage work in progress is completed, TMI-1 should not be ready to be operated safely. Within the scope of this evaluation, the team determined that TMI-1 is being maintained shutdown in a safe manner by qualified personnel.

The following beneficial practices and accomplishments were noted:

Station personnel are well qualified. Their morale, positive attitude, and motivation continue to reflect commitment to improve performance.

There is a high level of technical expertise among the chemistry, radiological protection, and maintenance technicians and engineers.

There is an overall improvement in chemistry and in the spare parts warehouse.

The Radiological Control Department has established high standards in the area of radiological protection.

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

There is a need for more supervisory involvement in the correction of identified deficiencies.

The material condition of some balance-of-plant system components needs to be improved.

Increased supervisory emphasis is needed on the industrial safety program.

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 GPU Nuclear Corporation 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 each station evaluation, the evaluation team follows up on responses to findings in previous reports. Findings with response actions that are incomplete, but progressing on a reasonable schedule, are carried forward in APPENDIX I to the report. In areas where additional improvements are needed, or where response actions have not been timely, a related finding that stands on its own merit is written. Thus, this report stands alone, and reference to previous evaluation reports should not be necessary. For this report, there is one finding related to previous findings and three findings carried forward in Appendix I.

The findings listed herein were presented to GPU Nuclear Corporation management at an exit meeting on November 14, 1984. Findings, recommendations, and responses were reviewed with GPU Nuclear Corporation management on January 28, 1985. Responses are considered satisfactory.

To follow the timely completion of the improvements included in the responses and the Appendix I items, INPO requests a written status by August 15, 1985. 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 GPU Nuclear Corporation.

GPU NUCLEAR CORPORATION

Response Summary

GPU Nuclear appreciates the thorough and comprehensive evaluation of TMI-1. The evaluation team provided valuable insights and suggestions for potential improvements. We agree with the evaluation team's findings and recommended areas for improvement as provided in the evaluation report, and think our replies to these findings are responsive and will further enhance our continued efforts to achieve excellence in all phases of operation, maintenance, and control at TMI-1. We believe that the underlying reason for the most meaningful findings was the lack of aggressiveness by first-line plant supervisors in implementing and enforcing our established high standards in the areas of radiological controls, industrial safety, and material condition of plant systems and components. As discussed in the responses to the individual findings, considerable action has already been taken to improve in this area. Follow-up to ensure these actions achieve the desired results will be conducted, and managers and supervisors will be held personally accountable for their responsibilities in this regard.

We consider that the beneficial and good practices noted are further indications of our efforts since the last evaluation to continue to improve safety of operations and to meet our goal of excellence. We are pleased that the evaluation team found no reason that, when outage work in progress is completed, TMI-1 should not be ready to be operated safely and that TMI-1 is being maintained shutdown in a safe manner by qualified personnel. Based on our current projections, outage work in progress should be completed in February 1985, and the unit will be ready to restart at that time, awaiting NRC's lifting of the shutdown orders imposed in 1979.

This is TMI-1's third INPO evaluation. All three have been conducted with the plant in the cold shutdown condition. Although we have received considerable benefit and implemented worthwhile suggested improvements from these evaluations, we believe further INPO evaluations of TMI-1's programs, performance, and operational capability will be more meaningful with the plant in an operating mode. The plant will soon be ready again to operate from a material and operator readiness standpoint and, dependent on the NRC's decision, we hope and expect it will be operating at the time of the next evaluation.

ORGANIZATION AND ADMINISTRATION

MANAGEMENT ASSESSMENT

PERFORMANCE OBJECTIVE: Management should monitor and assess station activities to improve performance in all aspects of nuclear plant operation.

Good Practice (OA.3-1) **The off-shift management tour program provides an effective means for increasing management presence in the plant.** Management personnel, ranging from foremen to vice president, regularly tour the plant outside normal working hours, sometimes in the company of shift personnel. This program contributes to good communications between management levels and provides an additional means for identifying areas for improvement.

Finding (OA.3-2) **Departments other than radiological control do not sufficiently support the radiological protection program.** The following deficiencies were noted:

a. In the absence of radiological control technicians, workers do not always comply with radiological protection procedures and requirements or use good radiological protection work practices.

b. The Radiological Awareness Report, which is used to identify both radiological protection problems and good ideas, is not being utilized by operations and maintenance personnel. This does not provide the plant with the benefit of input from experienced personnel in improving the radiological protection program.

c. Non-radiological protection managers are not identifying radiological protection issues on their back-shift manager tours.

Recommendation Emphasize manager and supervisor accountability for the performance of their workers in radiological protection and their responsibility to identify radiological protection issues. Utilize the back-shift manager tours to identify such issues and to monitor the effectiveness of this program. Expand the use of the Radiological Awareness Report, and encourage its use by all departments.

Response

Appropriate managers were reinstructed by the Vice President/ Director, TMI-1, and the Operations and Maintenance Director at a special Rad Awareness meeting and at the Site Managers meeting on the requirement for and responsibility of all supervisors to enforce good radiological control procedures and practices in all aspects of plant operations and maintenance. This subject will also be discussed with plant Operations/ Maintenance personnel during the Management Interface meetings scheduled to be conducted with each shift during the first six-week training cycle, commencing in January 1985. Utilization and value of the Radiological Awareness Report (RAR) will also be emphasized at these Management Interface meetings, as well as at the Site Managers meeting. The Manager, Radiological Controls will periodically advise the Vice President/Director and Operations and Maintenance Director on utilization and effectiveness of RARs by other than Radiological Control personnel. All managers involved in the Off Shift Tour Program have been formally instructed to observe for proper radiological control procedures during their tours, and if poor practices are noted, to take immediate on-the-spot corrective action. The Vice President/Director will monitor reports of Off Shift Tours to ensure radiological protection issues are being adequately assessed.

INDUSTRIAL SAFETY

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

Finding (OA.5-1)

Additional management and supervisory support of the industrial safety program is needed to promote safety awareness and to reduce the number of station accidents and injuries. Areas needing attention include adherence to industrial safety requirements and safe work practices, supervisory enforcement of station policies, and correction of long-standing industrial safety deficiencies.

Recommendation

Increase management and supervisory support of the industrial safety program. Ensure improvement efforts address the deficiencies noted in the finding.

Response

The requirement for all supervisors to support and enforce the requirements of the Industrial Safety Program was emphasized to all managers at a special Rad Awareness meeting and at the Site Managers meeting. This subject will also be discussed with Operations/Maintenance personnel during the Management

Interface meetings scheduled to be conducted with each shift during the first six-week training cycle, commencing in January 1985. All managers and all personnel participating in the Off Shift Tour Program have been instructed in writing to monitor industrial safety practices routinely and to take immediate on-the-spot corrective action when poor safety practices or violations of safety rules are observed. Those responsible for correction of safety deficiencies have been directed to review all outstanding items to ensure they have been assigned the necessary priority and are being engineered/worked as appropriate. The Vice President/Director receives a monthly progress report on outstanding safety material deficiencies and will monitor this report for progress and initiate necessary actions when needed to improve timeliness in correcting these items. Additionally, on January 1, 1985, a formal Safety Recognition Program was implemented with awards recognizing groups and individuals who achieve certain goals related to the reduction of injuries and illnesses.

QUALITY PROGRAMS

PERFORMANCE OBJECTIVE: **Quality programs should contribute to the effective performance of activities important to safety and reliability. Quality programs include quality assurance, quality control, and other programs that provide an independent assessment of plant activities or that function specifically to promote quality of workmanship.**

Finding (OA.8-1)

Line management accountability for the quality of some procedures needs to be strengthened. Procedure reviews performed by the quality group often identify deficiencies that should have been corrected prior to quality group review. Although this problem has been recognized, insufficient line management action has been taken to improve procedure quality.

Recommendation

Emphasize line management accountability for the quality of procedures. Consider training line supervisors in procedure review techniques used by the quality group.

Response

Management review in conjunction with QA/QC determined that the quality of most procedures as written, and before review by the quality group, was good with the exception of some maintenance procedures. A presentation on procedure preparation was conducted by the Plant Review Group Chairman for a majority of key maintenance supervisors and foremen. A repeat session will be held for those supervisors and foremen who were unable to attend. The presentation covered the procedure owner concept, procedure use, purpose of procedure critique (on job

completion), and the purpose of the biennial review, including the use of the required check-off sheet. All maintenance procedure technical reviewers and procedure owners were made aware that each procedure is to be sufficiently detailed so that a qualified individual can perform the required function without direct supervision in accordance with ANSI 18.7 For the next two months, senior maintenance management will review all procedure changes and new procedures to monitor that the desired level of improvement in procedure preparation/change/review is being achieved. Additionally, at the end of six months, QA/QC will review the QA/QC comments made on maintenance procedures/changes submitted for review during that time interval to assess the quality of the initial submittal.

FITNESS-FOR-DUTY

PERFORMANCE OBJECTIVE: The station fitness-for-duty program should identify persons who are unift for their assigned duties or for access to vital areas of the plant as a result of drug or alcohol use, or other physical or psychological conditions, and remove them from such duty or access.

Finding (OA.9-1)

Measures to ensure personnel are fit for duty need to be strengthened. The following items were noted:

a. Many supervisors have not been trained in how to recognize and handle the use of drugs and alcohol.

b. The company policy on off-duty drug and alcohol abuse refers only to instances involving criminal charges and does not establish a policy against other off-duty drug and alcohol abuse.

c. Health and safety information on drugs and alcohol needs to be provided to employees.

d. The company message on drug and alcohol abuse does not address employees whose safety and job could be affected by co-workers unfit for duty.

e. Closer liaison with local law enforcement agencies is needed in the drug detection effort.

Recommendation

Strengthen measures used to ensure personnel are fit for duty, including addressing the items noted in the finding. The "EEI Guide to Effective Drug and Alcohol Policy Development" could be of assistance in this effort.

Response

At this time GPU Nuclear is in the process of developing and implementing a program that is designed to cover both fitness for duty and continuous behavior observation. The supervisors' training program has been reviewed twice, and is presently being revised. It is planned for presentation to GPU Nuclear's senior staff in January 1985, with implementation in February 1985. This training program for all supervisors will include observation of behavior, symptoms of alcohol or drug use, and guidelines on what action the supervisor should take when observations indicate action may be necessary.

The planned program also includes an employee booklet, now in a draft stage, that covers such questions as on- and off-duty drug and alcohol use, safety of other employees, educational information on drugs and alcohol, and a summary of the Employee Assistance Program. The employee booklet should be available to the employees in February 1985.

Liaison with law enforcement agencies will be strengthened in order to assist in monitoring and controlling inappropriate use of alcohol and drugs.

OPERATIONS

CONDUCT OF OPERATIONS

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

Good Practice (OP.2-1) **Limiting the plant paging system announcements that can be heard in the control room is effective in reducing overall control room noise level.** Channel 3 of the page system has been designated as the operations channel, and only pages made on channel 3 are heard in the control room. The shift foreman can monitor all plant pages with a speaker at his desk.

PLANT STATUS CONTROLS

PERFORMANCE OBJECTIVE: 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.

Good Practice (OP.3-1) **The post-relief shift meeting enhances the overall turnover process.** The shift supervisor, foreman, control room operators, and several auxiliary operators meet to exchange information that relates to plant status and shift plans.

Finding (OP.3-2) **Improvement is needed in the administration of the blue tag clearance program.** Blue tags are sometimes used when component operation is not an integral part of a work effort or associated testing, contrary to the plant procedure. Components are sometimes not tagged in positions that establish safe working conditions and repositioning is necessary prior to starting work. When blue-tagged components are operated, documentation of actual component position is not maintained, and a review to ensure that safe working conditions are established prior to starting work sometimes does not occur.

Recommendation

Limit the use of blue tags to only those applications where component operation is an integral part of work or associated testing. Ensure components are tagged in the positions necessary to establish safe working conditions. Provide documentation when blue-tagged components are repositioned.

Response

Procedural changes incorporating the recommendations of this finding are in progress and should be issued by March 1985. Personnel who work with blue tags will be trained on the new procedures by June 1985.

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.

Good Practice (OP.5-1)

An effective program has been established to improve graphics in operations and maintenance procedures. The program provides consistent format and improved legibility and enhances procedure usability. Graphs, tables, drawings, and schematics are included in the program.

MAINTENANCE

PLANT MATERIAL CONDITION

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

Finding (MA.2-1)

Increased management and supervisory attention is needed to improve the preservation and material condition of plant systems and components. Inadequate implementation of preservation and material condition recommendations identified by the preventive maintenance group has resulted in degraded operating capability of some equipment.

Recommendation

Implement plant system preservation recommendations to include all items identified as important to plant operation by the preventive maintenance group. Upgrade the back shift supervisory inspection program to ensure plant systems and components are effectively preserved and material condition is maintained.

Response

Plant system preservation recommendations made by the preventive maintenance group will be implemented into the Operations Surveillance Program by May 1985. Managers participating in the Off Shift Tour Program have been directed in writing to monitor plant material conditions during their tours. All onsite managers have also been instructed to tour the plant more frequently in order to observe and identify to responsible supervisors system and equipment deficiencies and potential material problems.

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 work control system could be used more effectively to improve the material condition of the plant. Many plant deficiencies are not documented in the work control system. In addition, a number of job tickets (work requests) have been cancelled without providing adequate feedback to the originator of the job ticket.

Recommendation Ensure that material deficiencies are documented and corrected in a timely manner. Consider implementing a deficiency tagging system to aid in deficiency identification. INPO Good Practice MA-301, "Plant Material Deficiency Identification," could be of assistance in this effort. Provide reasons for cancellation of job tickets to the originators.

Response An improved system for identifying, documenting, and correcting material deficiencies in a timely manner will be in place by July 1985. INPO Good Practice MA-301, "Plant Material Deficiency Identification," will be used as a guide in developing this system. A change to maintenance procedure 1407-1 will be initiated by April 1985 to require that a copy of cancelled job tickets be returned to the originator.

MAINTENANCE FACILITIES AND EQUIPMENT

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

Finding (MA.8-1) **Improved controls are needed for in-plant storage of replacement parts and materials.** Items identified for storage throughout the plant are not included in the warehouse inventory and control system. As a result, usage and inventory information for these parts and materials is not available, and appropriate environmental storage requirements are not being maintained.

Recommendation Reduce in-plant storage of parts and materials where possible. Establish inventory and environmental controls for in-plant stored equipment.

Response An inventory of in-plant replacement parts and materials has commenced in order to identify what parts and materials are now stored in the plant. After this inventory is complete, the decision will be made as to which replacement parts and material should remain in the plant under proper inventory control and which should be turned back into the warehouse. This process should be completed by June 1985. The present plan is to return all parts that require special environmental control to the warehouse.

TECHNICAL SUPPORT

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
111	Satisfactory
17	Not applicable
32 (2 red tab)	Pending - awaiting decision
10 (no red tab)	Pending - awaiting implementation
0	Needs further review
153	Previously evaluated as satisfactory or not applicable

Cumulative Percent of Recommendations with Satisfactory Action Taken:

Plant	Industry Average	Color Category
96%	89%	Red
80%	71%	Other (Yellow and Green)

The following recommendations are pending - awaiting decision:

SOER Number	Recommendation Number
81-8	1, 4
82-11	4
82-12	1
83-1	11, 14
83-3	4, 5, 6
83-5	2
83-7	4, 5, 6
83-9	7, 8
84-1	1, 2, 3, 4, 5
84-2	1
84-3	1, 2, 3, 4, 5, 6
84-4	1, 2, 3, 4, 5

The following recommendations are pending - awaiting implementation:

SOER Number	Recommendation Number
81-5	4
82-8	1
82-11	3
82-13	1, 5, 11
82-15	3
83-9	3, 9, 10

An update on the status of each recommendation listed in the "pending - awaiting decision" or "pending - awaiting implementation" categories shown above is requested in the six-month follow-on response to this report. In addition, the status of each red-tab SOER recommendation received subsequent to this evaluation should be included in the six-month follow-on response. A tabular summary, similar to that above, is requested.

NPRDS STATUS

The status of participation in the Nuclear Plant Reliability Data System (NPRDS) is as follows:

		Status
Engineering Data Reporting		
a.	Date by which data submitted to reflect revised NPRDS scope will be completed	Complete
b.	Number of engineering reports for basic scope submitted to INPO	3450
c.	Number of engineering reports ready to submit	N/A
Failure Reporting		
a.	Reports are being submitted in accordance with correct version of scope manual	Yes
b.	Majority of reports received by INPO within 3 months of failure discovery	No
c.	Degree of failure reporting (reportable failures actually reported)	High
d.	Quality of failure reports	Acceptable
NPRDS Usage		
a.	Plant personnel trained on remote computer searches	* 1
b.	Number of searches conducted last three months (Average of most active users - 50)	38
c.	Effectiveness of NPRDS use in improving plant reliability	Minimal

* Unit 2 person

Good Practice (TS.3-1)

The weekly screening meeting held by the plant analysis section at GPU-Parsippany is an effective means of reviewing operating experience information. Both in-house and industry operating experience are reviewed and discussed by the manager and plant analysis engineers for significance, applicability, and need for further action. After agreement is reached by the plant analysis personnel as to disposition of the operating experience information, it is then entered on a computer tracking system.

Finding (TS.3-2)

Some in-house events or trends are not included in the operating experience review program. While major transients, scrams, and reportable occurrences receive rigorous investigation, other lesser events, such as mechanical and electrical component failures, chemistry problems, and human error events, are not included in the in-house operating experience review program.

Recommendation

Expand the scope of the in-house operating experience review program to include the review of failures and events that, while not major transients, scrams, or reportable occurrences, still have the possibility of degrading plant safety, reliability, or availability.

Response

GPU Nuclear considers that ample systems and review groups are in place to review all events that have the possibility of degrading plant safety, reliability, or availability. The key to implementation of a review program that provides adequate review of all events, not just major or reportable ones, is identification and reporting of these events to the applicable investigation/review groups. The Manager, Plant Operations will ensure that use of the Incident Reporting System, as described in procedures AP-1029 and AP-1044, is expanded to cover all incidents that did or could affect plant safety, reliability, or availability. Procedure AP-1029 will be revised to include a list of in-house events such as those identified in INPO Good Practice TS-406, "Plant Program for In-House Operating Experience Review," as typical of the expanded scope of events that will be included in the TMI-1 Incident Reporting System. He will also ensure these reports are distributed to appropriate on-site and off-site operating experience review groups for review and analysis. The Training Department will be provided copies, as determined appropriate, for inclusion in applicable training programs. Effectiveness of the in-house operating experience review program will be assessed after start-up. The real effectiveness of this program is difficult to evaluate while the plant remains shut down.

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)

Improvements are needed in the utilization of the Plant Temporary Jumper, Link, and Mechanical Modification (TJL & MM) Program. The following problems were identified:

a. Some temporary modifications have been in effect for extended periods of time.

b. Drawings are not revised for temporary modifications that have been in effect for extended periods of time.

c. Some temporary modifications are not documented under the TJL & MM program.

d. Items intended for permanent application have been installed under the TJL & MM program.

Recommendation

Upgrade the TJL & MM program to address the items in the finding. The proposed minor modification program should be implemented to preclude the installation of permanent modifications under the TJL & MM program.

Response

Plant Engineering and Operations will jointly review each jumper, lifted lead, and temporary mechanical modification currently in effect to determine those that must be removed for restart and those that should be made documented modifications and be appropriately identified on updated drawings. Those in the latter category will be identified as priority items to the appropriate engineering group so that they can be implemented as documented modifications and required documentation and drawing updates completed. Also, those responsible for the weekly, monthly, and yearly reviews of the jumper, lifted lead, and temporary mechanical modification will be reminded to specifically check for continued applicability.

Additionally, all managers have been reminded that all modifications must be properly documented and approved before installation, and that the TJL & MM program is not to be used as a substitute for the approved and accepted design change/modification process.

A design group on site to handle minor modifications, under the direction of the Technical Functions Division, has been approved and funded for 1985. It is expected that this group will be in place and functioning by mid-1985. This group should significantly reduce the difficulty and administrative requirements for approval and installation of minor modifications. If successful

in this endeavor, site operating personnel will gain confidence that needed minor modifications can be engineered and installed in a timely manner and with minimum administrative requirements.

Finding (TS.4-2)

Improvements are needed in the control of changes to the process computer scan, log, and alarm functions. The control process for alarm setpoints is not clearly defined or understood. Adequate documentation of alarm changes is not always accomplished.

Recommendation

Improve the process computer scan, log, and alarm controls by clearly defining requirements and responsibilities. Controls should address the following items:

a. appropriate technical reviews and approvals

b. documentation of the reason for the alarm change

c. documentation of both the new and old alarm setpoints

d. expiration dates for temporary changes to alarms

e. revision of applicable procedures

f. notification of the appropriate computer group for permanent alarm listings update

Response

Procedure changes to address the control of changes to the process computer scan, log, and alarm functions are in progress and should be issued by March 1985.

TRAINING AND QUALIFICATION

TRAINING ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: The training organization and administration should ensure effective implementation and control of training activities.

ACCREDITATION STATUS

The status of training program accreditation is as follows:

Program	Utility Schedule for Self-Evaluation Reports	Status*
Operations Area		ATV (10/84)
Shift Technical Advisor		ATV (10/84)
Instrument and Control Technician	6/86	
Electrical Maintenance Personnel	6/86	
Mechanical Maintenance Personnel	6/86	
Chemistry Technician	6/85	
Radiological Protection Technician		ATV (10/84)
Manager and Technical Staff	1/86	

* Status of accreditation is indicated as follows:
  - o Accrediting Board action - ACC (accredited) or DEF (deferred) and date (month/year)
  - o ATV - indicating an Accreditation Team Visit and date (month/year)
  - o SER -indicating self-evaluation report received and date (month/year)
  - o blank - indicating a lesser progression

LICENSED OPERATOR TRAINING AND QUALIFICATION

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

Good Practice (TQ.3-1) **An effective method is utilized for reinforcing and applying basic theoretical engineering concepts.** A basic principles trainer is used in conjunction with detailed training exercise guides to support the demonstration, review, and discussion of basic concepts such as pump fundamentals, fluid flow fundamentals, thermodynamic laws, vapor and gas laws, and other related engineering principles. A good instructor-to-student ratio, coupled with detailed training support materials, contributes to the success of this approach.

Good Practice (TQ.3-2) **A comprehensive examination control process has been developed and implemented for operator written examinations.** This process specifically addresses the issues of examination security and control, examination administration, examination grading, and examination review. The net result is a formal approach to written examinations that helps minimize the possibility of examination compromise.

RADIOLOGICAL PROTECTION

RADIOLOGICAL PROTECTION ORGANIZATION AND ADMINISTRATION

PERFORMANCE OBJECTIVE: Radiological protection organization and administration should ensure effective implementation and control of radiological protection activities.

Good Practice (RP.1-1) **The effectiveness of the radiological protection program is routinely reported to senior management.** This is accomplished through bi-weekly reports to the president of the utility, monthly reports to the board of directors, and monthly reports to the vice presidents responsible for operations and radiological protection. These reports describe the plant's performance in personnel exposure, personnel contaminations, numbers and sizes of contaminated areas, number of airborne areas, significant radiological incidents, and problem areas.

Good Practice (RP.1-2) **The Radiological Control Department has high standards in the area of radiological protection.** When Radiological Control technicians observe poor radiological work practices, they consistently provide on-the-spot guidance and corrections. Radiological Control supervisors and managers routinely observe the performance of both technicians and workers, as well as identify deficiencies in material conditions and housekeeping. Radiological Control management routinely informs technicians of changes in radiological protection requirements and the resulting expectations in their performance.

Finding (RP.1-3) **The Radiological Investigative Report program is not effectively used in identifying and addressing root causes of radiological incidents.**

Recommendation Establish criteria for an acceptable investigation and report. Based upon these criteria, provide written guidance and training to supervisors who are likely to perform an investigation of a radiological incident.

Response

During the first half of 1985, selected Radiological and Environmental Control Division and TMI-1 managers will attend a summary course on basic system safety that includes root cause analysis of radiological incidents. Based on the results of that training, procedure revision and/or supervisory training will be pursued in order to improve incident investigation and reporting. This action is expected to be completed by June 1985.

EXTERNAL RADIATION EXPOSURE

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

Finding (RP.4-1)

The present use of alarming dosimeters does not ensure that personnel are able to adequately control their exposures. The following problems were identified:

a. Alarm setpoints are not always established.

b. Workers are not always aware of the alarm setpoint.

c. Workers do not periodically read the alarming dosimeter to monitor their exposure.

Recommendation

Provide guidance to Radiological Control technicians in establishing alarm setpoints for routine and non-routine work. Instruct workers on the use of alarming dosimeters, including the need to monitor their exposures and the need to know the alarm setpoint. Emphasize the purpose and use of the alarming dosimeter during the radiation worker initial and retraining programs.

Response

By Standing Order, every alarming dosimeter issued now has an alarm setpoint established. This requirement, as well as the requirement for the issuer to inform the user of the alarm setpoint, will be formally proceduralized by March 1985. The purpose and use of the alarming dosimeter, including the necessity to periodically read the dosimeter, will be reemphasized in radiological worker training/retraining commencing in January 1985.

CHEMISTRY

CHEMISTRY CONTROL

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

Finding (CY.3-1)

Operation and performance monitoring of the makeup water plant need improvement. The following problems were noted:

a. Mixed bed effluent data are indicative of occasional low level contaminant leakage.

b. The conductivity limit of 0.95 micromho/cm for mixed bed effluent is not consistent with best industry practices.

c. Mixed bed effluent limits for chloride, sodium, and sulfate do not ensure minimum contaminant ingress to plant systems.

d. Grab sample analyses for mixed bed effluent conductivity are not consistent with the in-line monitor.

e. Chemical analyses of the effluent are only performed at 80 percent completion of the demineralizer bed run cycle.

Recommendation

Improve the operation and monitoring of the makeup water plant. Reduce the mixed bed conductivity limit to 0.1 micromho/cm. Lower the allowable effluent limits for chloride, sulfate, and sodium consistent with Steam Generator Owners' Group feedwater recommendations. Utilize a flow-through cell and portable meter in place of the grab sample. Periodically analyze and trend effluent contaminant levels at the beginning and end of the bed run cycle to establish baseline and performance information.

Response

Operational limits and performance monitoring of the makeup water plant will be reviewed to address the problems noted in the finding. The upper conductivity limit for the makeup water system will be reduced to a level consistent with the water quality expected in the condenser hotwell. Conductivity of the makeup water system will be measured and recorded each shift using the in-line monitors. Effluent monitoring of the makeup water system will be conducted daily. This review and resulting changes in chemistry controls will be implemented by February 1985.

Finding (CY.3-2) **Some chemistry limits in the computer data management system are not consistent or appropriate for present plant lay up/shut-down conditions. In addition, limits for the condensate storage tank do not ensure minimum contaminant ingress to secondary and related auxiliary systems.**

Recommendation Perform an evaluation of limits presently in effect. Provide limits that are meaningful for daily detection of undesirable results.

Response The computer data management system's limits were consistently more conservative than the limits established in the water chemistry specifications. This resulted in more out-of-specification indications as identified by the computer than actually existed. The computer limits for some auxiliary systems had been established based on requirements of an operating power plant condition. Actions had been underway at the time of the evaluation to update computer limits for the existing plant conditions. This update will be continued to minimize differences between the computer limits and corrective action limits, regardless of plant conditions. In the case of the condensate storage tank, computer limits have been changed to help ensure that low level contamination of the contents of the tank are identified in a timely manner so that contaminant ingress to the secondary and related auxiliary systems can be minimized.

LABORATORY ACTIVITIES

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

Finding (CY.4-1) **Certain analysis techniques and practices do not ensure the most accurate results.** Grab samples from the stator cooling system result in lower pH and higher conductivity values than would actually be expected. In addition, reported limits for sodium, chloride, and sulfate are not consistent with the actual detection limits for the respective laboratory instruments.

Recommendation Evaluate the present method for analyzing the stator cooling system and other high purity water samples. Consider recording in-line stator cooling conductivity meter values in lieu of grab sample results. Record the actual analytical results for sodium, chloride, and sulfate, consistent with the analytical detection limits, to allow low-level trending of these impurities.

Response A review has been made of TMI-1 water systems to evaluate the appropriateness of conductivity and pH analysis methods.

With the exception of the stator cooling system and the makeup water systems, all the systems have chemical additives (therefore are not high purity water systems) or are open to the atmosphere (condensate storage tank and demineralized water storage tanks). Grab sample analyses run for the stator cooling and the makeup water systems had been performed as a rough backup to on-line instrumentation. In the future, the indicators and recorders for these two systems will be reviewed by a chemistry technician once per shift, and appropriate data will be recorded in lieu of performing conductivity and pH grab sample measurements. Periodically, the pH and conductivity measuring devices will be checked by comparing results against flow cell samples taken in parallel with the flow that is monitored. This process will be initiated by the end of January 1985.

Plant Chemistry will evaluate the existing detection limits for impurities and reduce the reported detection limits where appropriate. This will result in recording analytical results consistent with the actual analytical detection limits, thus allowing low-level trending of subject impurities. This action will be completed by February 1985.

Finding (CY.4-2) **Apparent voltage fluctuations are causing variation in efficiencies for the gross beta-gamma counters and liquid scintillation counter in the counting room.**

Recommendation Investigate and correct the cause of this problem.

Response Variations have been recognized in the efficiencies of the identified radiochemistry counting equipment for the past nine months, and work has been ongoing during that period to identify the cause and correct the problem. These actions include use of a voltage controller, installation of an alarm to indicate AC power fluctuations, and monitoring of line voltage. Because of the quality control checks run with each batch of samples, the variations in efficiency have not led to the reporting of erroneous results.

Plant Engineering is currently conducting a review of the power supply for these instruments. Appropriate corrective actions will be taken when the cause of the problem is identified.

CHEMICAL AND LABORATORY SAFETY

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

Finding (CY.5-1)

The safety program for handling certain bulk chemicals in the plant needs improvement. Some problem areas noted are as follows:

a. Hydrazine, sodium hydroxide, and sulfamic acid are handled using open transfer containers.

b. An eyewash or safety shower is not present in the vicinity of the domestic water chlorination system.

c. Spray protection is needed in the walkway near the water treatment acid and caustic transfer pumps and lines.

d. Operation procedures do not adequately address chemical handling safety concerns.

Recommendation

Eliminate the safety concerns noted above. Ensure that applicable personnel are aware of the requirements for handling hazardous chemicals.

Response

The following actions address this finding:

a. The direct handling of hydrazine and sodium hydroxide in open containers has been eliminated. Sulfamic acid is no longer used and will be removed from the plant in January 1985.

b. An eyewash station will be installed in the vicinity of the domestic water chlorination system by February 1985.

c. The need for spray protection in the walkway near the water treatment acid and caustic transfer pumps and lines has been reviewed, and it was determined that the system operating pressure and the moat design are such that protection is not practical or justifiable.

d. Plant operating procedures dealing with chemical handling will be reviewed in regard to safety concerns and will be upgraded, as appropriate, by March 1985.

RADIOACTIVE EFFLUENTS

PERFORMANCE OBJECTIVE: Radioactive effluent controls should minimize radioactivity released to the environment.

Good Practice (CY.6-1) An effective quality control program is in place to help ensure accurate determination of radionuclides in batch releases. In addition, performance of the waste evaporator cleanup system is aggressively monitored in order to minimize effluents.

EMERGENCY PREPAREDNESS

EMERGENCY ASSESSMENT AND NOTIFICATION

PERFORMANCE OBJECTIVE: Emergency assessment and notification procedures should enable the emergency response organization to correctly classify emergencies, assess the consequences, notify emergency response personnel, and recommend appropriate actions.

Finding (EP.5-1)

The equipment and methods used to obtain a post-accident sampling system (PASS) reactor coolant liquid sample do not minimize radiation exposures for personnel who must obtain the sample. Problems identified are as follows:

a. Sample volume is greater than that needed for analysis of a single sample.

b. The leaded glass shield placed on the sample sink is not large enough to adequately shield the person drawing the sample.

c. The sample bottle must be closed by hand (screw-on lid) after the sample is drawn.

d. Several valves are not properly labeled (CA-V317, CA-V26 A, B, C).

e. The location of temperature gauge CA4 TI is incorrectly stated in the PASS sampling procedure (1004.15).

Recommendation

Analyze equipment and methods used to obtain a PASS reactor coolant liquid sample. Provide system improvements for problem areas noted above in order to minimize personnel exposure.

Response

An analysis of the equipment and methods used to obtain a PASS reactor coolant liquid sample will be conducted by June 1985. This analysis will include a review of and corrective actions as appropriate for the specific problems noted in the finding and will specifically concentrate on areas of improvement to minimize personnel exposure.

APPENDIX I

Summary of Outstanding Response Action from Previous Evaluation (1983)

DOCUMENT CONTROL

Finding (OA.6-1)

Vendor technical manual content, distribution, and use are not rigorously controlled. Some manuals marked "Controlled Copy" were noted in the plant without evidence of proper control. Some maintenance procedures refer to portions of technical manuals for detailed work instructions even though the referenced portions have not been reviewed for technical adequacy.

Recommendation

Establish improved control of vendor technical manuals to ensure they are complete and current. Ensure that portions of manuals used to control work are technically adequate.

Response

A list of about 60 technical manuals, which were considered to be the most important for plant operation and maintenance, has been selected for priority review and updating, including vendor participation as required. The revised manuals will be issued as "controlled documents" using the normal document control system. This is a long-term project that may take two years to complete. Procedures are in place for the control of these manuals. All manuals that are currently in the plant will be stamped "for information only." As controlled copies from the initial list of 60 manuals are received, additional manuals will be selected for review and upgrading as part of this continuing program. When a manual has been issued as a controlled document, all "information only" copies of that manual will be purged from the plant.

Maintenance Procedure 1407-1, Corrective Maintenance, will be revised by November 1983 to require that an engineering review be conducted of the applicable portions of technical manuals whenever technical manuals are used to control work.

Status

To date, approximately 20 technical manuals have been issued as controlled documents. Manuals not yet in the control system have been marked "for information only." This effort to control manuals important to safe and reliable plant operation is continuing.

Maintenance Procedure 1407-1, "Corrective Maintenance," has been revised to require engineering review prior to use of any manual that is not yet controlled, when that manual is used to obtain technical information such as torque values, dimensions, tolerances, and types of lubricants.

When manuals are used directly in performing work, reviews appropriate for procedures are performed on applicable technical manual information. In many instances, the information is included directly in the procedure.

In addition to the above actions, consolidated administrative guidance in this area is planned. A station administrative procedure for the use and control of technical manuals is expected to be developed and implemented by March 1985.

NON-LICENSED OPERATOR TRAINING AND QUALIFICATION

Finding (TQ.2-1)

A training program for middle-level managers in plant systems and technology is needed. Currently, such courses exist for individuals at the operator/technician level and at the senior management level. However, individuals in positions between these levels receive no such training.

Recommendation

Provide plant systems and technology training to middle-level managers. Existing programs for personnel at operator/technician levels and/or senior management levels could be utilized in this effort.

Response

TMI agrees that a formal training program for middle-level managers in plant systems and technology is needed. A specific course on pressurized water reactor (PWR) systems and technology is under development and is scheduled to be available in July 1982. Attendance at this course, or portions thereof, will be determined on an individual basis taking into consideration the background, work assignments, and professional development objectives of the individual employee.

Status

The TMI-1 Managers Technical Training Program Course is in the final review stages after delay due to other higher priority efforts. Course and lesson objectives have been written. Delivery of the first session of the course is planned for February 1985.

TRAINING FACILITIES AND EQUIPMENT

Finding (TQ.9-1)

Improvements are needed in the reference and study material available for use in systems training. Existing system descriptions are out of date. The plant is aware of this situation, and an Operations Plant Manual is being written to provide updated system descriptions.

Recommendation

Complete the development of the Operations Plant Manual. Implement a process to ensure that the newly developed material will be kept updated to reflect system modifications.

Response

The Operations Plant Manual is scheduled to be completed by January 1984. A specific individual has been assigned as coordinator for this manual, with an individual "owner" assigned to each section. It will be the owner's responsibility to review periodically and update his/her section of the manual in accordance with a specific schedule. Individuals using the manual can recommend changes, as appropriate, by simply contacting the owner of the section involved. Updates required due to modifications to plant equipment/systems will be formally controlled through Administrative Procedure 1043, Control of Plant Modifications.

Status

All sections of the Operations Plant Manual have been written in at least draft form. The manual is now about 93 percent complete and is planned to be completed by March 1985.

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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	)	
METROPOLITAN EDISON COMPANY	)	Docket No. 50-289 SP
	)	(Restart Remand on Management)
(Three Mile Island Nuclear	)	
Station, Unit No. 1)	)	

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