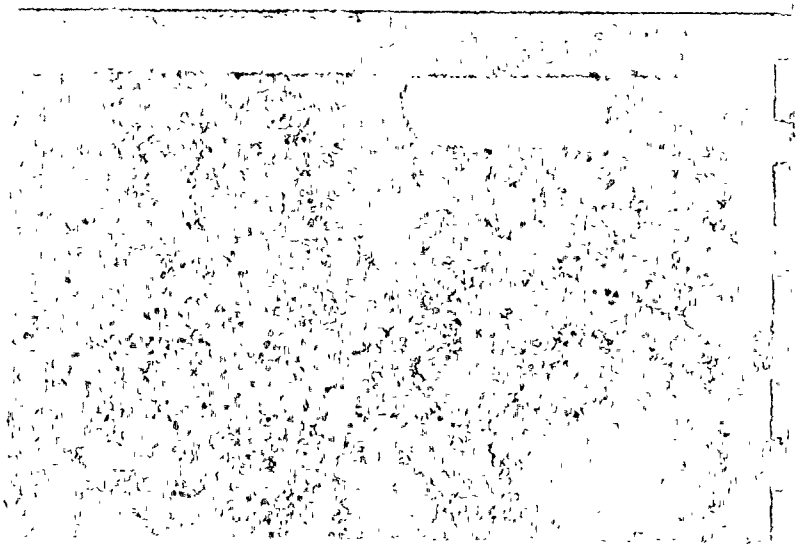
1982 Evaluation

D.C. Cook Nuclear Plant

Indiana & Michigan Electric Company

INPO



EVALUATION

of

DONALD C. COOK NUCLEAR PLANT

Indiana & Michigan Electric Company

SUMMARY

INTRODUCTION

The Institute of Nuclear Power Operations (INPO) conducted an evaluation of Indiana & Michigan Electric Company's (I&M) Donald C. Cook Nuclear Plant during the weeks of March 15 and March 22, 1982. The plant is located on the southeastern shore of Lake Michigan near the city of Benton Harbor, Michigan. The plant has two Westinghouse pressurized water reactors rated at 1054 and 1100 Mwe (NET). Unit one began commercial operations in August 1975 and unit two in July 1978.

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 plant 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. Corporate activities were not included in the scope of the evaluation, except as an incidental part of the plant evaluation. 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 operated in a safe manner by qualified personnel.

The following beneficial practices and accomplishments were noted:

Plant personnel at all levels exhibited a positive professional attitude.

Material deficiencies are efficiently tracked on laminated system prints that provide system material status and prevent duplication of job orders.

Shielded frisking booths are strategically placed throughout the auxiliary building.

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

Management and supervisory personnel need to be more involved in observing and evaluating plant operations.

Control of industrial chemicals needs improvement.

Improved adherence to station procedures is needed in industrial safety, radiological protection, and chemistry.

A chemistry quality control program is needed to ensure the desired accuracy is achieved in analytical measurements.

The modification program should be upgraded to ensure more timely completion of procedure changes, print revisions, and operator training.

Increased efforts are needed to reduce the number of lighted or alarmed control room annunciators.

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 Indiana & Michigan Electric Company 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 American Electric Power Service Corporation (AEPSC) and Indiana and Michigan Electric Company management at an exit meeting on March 25, 1982. Findings, recommendations, and responses were reviewed with AEPSC management on July 28, 1982. Responses are considered satisfactory.

To follow the timely completion of the improvements included in the responses, INPO requests a written status by March 31, 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 the Indiana & Michigan Electric Company and American Electric Power Service Corporation.

INDIANA & MICHIGAN ELECTRIC COMPANY

Response Summary

The Indiana & Michigan Electric Company is pleased that INPO found the Donald C. Cook Nuclear Plant being operated in a safe manner. As a result of the INPO evaluation, we have become aware of a number of areas that need improvement. We appreciate these INPO findings and recommendations for they should help the Cook Nuclear Plant meet the benchmarks of excellence for nuclear power operation.

We have responded to each of your findings. In preparing those responses our goal has been to positively address the findings and recommendations and to make desired improvements in a timely manner. We do feel obligated to point out that a number of the INPO findings are items that had been identified prior to the INPO evaluation and for which improvements were already underway.

We will keep INPO advised of progress made in our responses to the findings in a six-month follow-up status report. We appreciate the opportunity to work with INPO to improve our nuclear operations.

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)	Goals and objectives for the D. C. Cook Plant have not been issued for 1982. Guidelines for these items are currently being developed at American Electric Power Service Corporation (AEP) corporate headquarters.
Recommendation	Prepare and distribute goals and objectives for the station. Develop a method for reporting and monitoring progress toward goal and objective achievement.
Response	A 1982 Policy Statement containing goals and objectives for the plant has been issued. Job performance reviews will be used as one means of monitoring the status of annual objectives.

MANAGEMENT ASSESSMENT AND QUALITY PROGRAMS

PERFORMANCE OBJECTIVE: Management should assess station activities to ensure and enhance quality performance of all aspects of nuclear plant operation.

Finding (OA.3-1)	The quality assurance (QA) program does not include provisions to ensure that appropriate action is completed in a timely manner on audits, surveillances, and other identified QA action items. Many examples were noted where items were not completed by the targeted completion date, and no follow-up action was taken.
Recommendation	Expand the QA program to provide a method of notifying appropriate management levels when action for QA items is not completed on schedule.
Response	PMI-7020, Review and Audit, contains provisions for notifying management when action items are not completed by the response due date. Increased management attention has been placed on the prompt resolution of commitments.

Finding (OA.3-2)

Plant personnel are not always aware of action commitments made by off-site organizations. Examples were noted where the plant was not aware of and, therefore, did not implement action commitments made by personnel at AEP headquarters.

Recommendation

Establish a method to ensure that plant management takes appropriate action on all applicable commitments.

Response

This problem had been identified prior to the INPO evaluation, and a concentrated effort had been initiated by the plant to search out and make current all items for which the plant has commitments. The QA Department maintains appropriate records for plant commitments and follows up to ensure that required items are addressed on time.

The existing "Computerized Commitment Program" (AEPSC General Procedure No. 2.2) is used to notify personnel of commitment assignments and track their closeouts. This is being reviewed to ascertain where methods can be improved to enhance the overall effectiveness of the program for use both at the plant and at the AEPSC Engineering Office. Results of the review are scheduled for implementation by September 1982.

Finding (OA.3-3)

Management and supervisory personnel need to be more involved in monitoring and assessing important aspects of plant activities. Numerous material deficiencies, industrial safety discrepancies, and procedural problems requiring corrective action had not been brought to the attention of management.

Recommendation

Managers and supervisors should frequently inspect the plant to observe actual operations and plant conditions and to identify deficiencies and out-of-specification conditions. Follow-up systems should be utilized to ensure that corrective action is completed for all identified problems.

Response

The program of regular tours and feedback on observations was placed in effect June 4, 1982. The plant manager recognizes a concomitant necessity to reduce the administrative workload that currently exists in order that this new requirement not be just an added assignment.

DOCUMENT CONTROL

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

Finding (OA.6-1)

The method for making changes to procedures and instructions needs to be improved. Problems noted in the current process include the following:

a. Numerous temporary change sheets are attached to an affected procedure and are not incorporated into the body of the procedure. Plant personnel have started a program to improve this condition.

b. Some commitments have been dropped through expiration of temporary change sheets or deletion of temporary change sheets when superseding temporary changes are issued.

c. Temporary change procedures are being used to implement permanent changes to procedures and instructions without appropriate review.

Recommendation

Revise the method of changing procedures and instructions to minimize the number of changes that are attached to procedures or referenced in the body of procedures. Ensure that all permanent changes are subjected to a formal review and approval process.

Response

A pilot program intended to reduce the complexity of procedures caused by the method of making changes by use of Temporary Change Sheets was initiated in February 1982. On refinement and completion of appropriate training, it is intended to implement this program plantwide by March 1983.

A program was initiated in the summer of 1981 to completely review all procedures. As of the date of the evaluation, all operating procedures had been placed on a word processor to facilitate rapid revision to the procedures instead of using pen and ink changes. This should reduce the number of temporary sheets outstanding at any one time.

OPERATIONS

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.

Finding (OP.3-1)

A periodic review of the status of clearance red tags is needed. Determination of the condition and status of tags and clearances is not currently required by station procedures after initial posting.

Recommendation

Develop and implement a program for the periodic review of the status of current outstanding clearances. The program should include periodic checks for the following:

a. applicability or need for the clearances

b. proper placement and installation of each tag

c. proper position/condition of tagged equipment

d. presence of unauthorized tags

Response

Plant supervisory personnel have been assigned responsibility to review the tagging system and to develop and implement a revised program that includes the above recommendation by September 1982.

Finding (OP.3-2)

The size of clearance/caution tags and the method of attaching them to control boards and facility components should be improved. Tags are of a size that can obscure labels, indicating lights, and control switch positions. Tags are not always securely attached.

Recommendation

Implement the use of smaller tags on control boards. Provide a more secure method of attaching tags to equipment. INPO's Good Practice "Procedures for the Protection of Employees Working on Electrical and Mechanical Components," OP-203, is a reference that could be of assistance in this area.

Response

This problem had been identified prior to the INPO evaluation, and an engineering study was initiated to develop improvements in the area of control board tagging. Orders have been placed for smaller tags. The improvements identified by this study will be incorporated into plant procedures by September 1982. The contents of OP-203 will be incorporated into this study.

Finding (OP.3-3)

Rounds checklists do not provide for recording sufficient information to adequately monitor equipment performance or service needs. Equipment operating parameters are not recorded, and no guidance is given to recognize when a degraded condition may exist.

Recommendation

Develop comprehensive rounds checklists for all watch stations. The checklists should provide guidance for the conduct of the watch, logging of required equipment readings, and documentation of corrective action taken when abnormal conditions are detected. Minimum and maximum acceptable values for selected equipment parameters should be included on the checklists.

Response

A complete review and rewrite of the plant procedure "Routine Plant Inspection Outside of the Control Room" will be completed by April 1983. This procedure rewrite will include combining the inspection tour directives and the check-off sheets into one. Also, provisions will be made for required equipment readings and documentation. Minimum and maximum values for selected equipment parameters will be included in the new procedures, where applicable.

Finding (OP.3-4)

Controls do not exist for the use of yellow caution tags. These tags are used in the control room to provide caution instructions to operators, but outside the control room, they are generally used as information tags. For example, twenty-seven unsigned yellow tags were used for valve identification in the area of the auxiliary feed pump.

Recommendation

Establish a comprehensive policy and instructions for the use of yellow caution tags. This policy should include provisions to prevent unnecessary or inappropriate use of these tags.

Response

The use and control of caution tags are included in the engineering study and review of the tagging system, which had been initiated prior to the INPO evaluation. Improvements identified in the review will be incorporated into plant procedures. In the six-month follow-up report, the company will provide a status and the date for completing the incorporation of improvements into plant procedures.

Finding (OP.3-5)	**Operating shift personnel should be provided with individual shift turnover checklists for each station.** General turnover guidance is provided using Standing Orders. However, no checklists are provided for use during turnover.
Recommendation	Develop individual shift turnover checklists for each watch station. Checklists should provide guidance to operating personnel to ensure that all important watch station information is reviewed. INPO's Good Practice OP-201 "Shift Relief and Turnover" may be of assistance in developing such checklists.
Response	The use of shift turnover checklists is being evaluated by the Operations Department staff. The contents of OP-201 will be considered in this effort. In the six-month follow-up report, the company will provide an update on this activity.

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)	**Controlled system operating procedures are not available to personnel at manned local operating stations.** Operators must obtain copies of controlled procedures from the control room to operate components/equipment at local, manned stations.
Recommendation	Provide applicable controlled operating procedures at local, manned stations such as the radwaste control panel, the diesel generator rooms, and the make-up water station.
Response	Books containing specific, controlled copies of procedures have been placed at the local stations for the makeup plant, diesel generator rooms, south radwaste evaporator, and the waste disposal system panel. Review for other appropriate areas will continue.

Finding (OP.5-2)	**Temporary graphs, labels, drawings, and portions of procedures are attached to control panels and used as operator aids without control or approval.** A method to control such material has been developed for control room panels, but it is not used in other areas of the plant.

Recommendation Develop and implement a policy to minimize and control the posting of graphs, labels, drawings, and instructions throughout the plant. This policy should include a mechanism to ensure that necessary posted material remains current and reflects approved operating information.

Response The tags on the control room panels are now controlled so that anything that is attached to the panels as operator aids must be approved by the Shift Supervisor or Assistant Shift Supervisor. This method of control will be expanded to include those panels outside the control room. Quarterly panel checks will be initiated to ensure graphs, labels, drawings, and instructions are current.

The above controls will be monitored in a quarterly surveillance, including appropriate check-off sheets for each panel. These actions, including one quarterly surveillance, will be completed by December 1982.

OPERATIONS FACILITIES AND EQUIPMENT

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

Finding (OP.6-1) Large quantities of equipment and unnecessary material are left in areas where work has been completed. Equipment not currently in use was found in many areas of the auxiliary and turbine buildings where it could impair access to operating equipment or create a potential for damaging equipment or injuring personnel.

Recommendation Survey the auxiliary and turbine buildings and remove unnecessary material/equipment to more acceptable storage areas. This is important in areas where chemicals are stored and industrial safety hazards are apparent.

Response Plant housekeeping was recently placed under plant supervision to upgrade the effectiveness of the housekeeping effort. The addition of five personnel to the utility crew has resulted in more timely correction of problems. Significant progress has been made. In addition, alternatives for on-site warehouse facilities for equipment currently stored in the plant are being investigated. This area will be reviewed during periodic tours by management to ensure progress is sustained.

Finding (OP.6-2)

Plant piping, valves, and components are not labeled or identified to facilitate efficient plant operation. Identification of some important components has been accomplished by felt marker, but without consistency. Systems information such as hydrogen and condensate flow paths are not identified.

Recommendation

Develop a program to label plant piping, valves, and components to enhance operator training and reduce the possibility of operational errors.

Response

A program to label plant breakers has been developed and is being tested. The labeling of valves with their unique identification number and functional title has been ongoing since the plant was built. No development work has been done on the system labeling such as hydrogen and condensate piping. A review of the labeling program suggested by INPO will be conducted to determine those areas where labeling would facilitate efficient plant operation, and a priority system for labeling will be established. This review will be completed by December 1982.

Finding (OP.6-3)

Announcements made over the public address system could not be heard or understood in many areas of the station. Some speakers were muted.

Recommendation

Conduct a survey to determine areas of the station where the public address system cannot be clearly understood. Adjust installed speakers and provide additional speakers if necessary to ensure audible clarity in all areas of the plant.

Response

This problem had been identified prior to the INPO evaluation, and the plant PA system was expanded by two design changes that involved audible and visual nuclear evacuation alarm capabilities. At that time, all plant spaces were surveyed for audibility of the evacuation alarm and, in areas where the PA system could not be heard, additional speakers were installed. Areas of high ambient noise level had strobe warning lights installed in addition to the PA speakers. Prior to the conclusion of major outages, several technicians are assigned to ensure that the overall PA system is functional, including volume adjustment. This practice will continue in the future.

A check of the PA system similar to that described above will be performed by January 1983 to verify proper system operation.

Finding (OP.6-4)

More effective action is needed to minimize the number of control room annunciators that are in a lighted or alarmed condition during power operation and to reduce the incidence of nuisance alarms. A program has been instituted to identify problem annunciators; however, no substantive program has been established to correct identified deficiencies.

Recommendation

Upgrade the alarm reduction program by increasing the priority of design changes and repairs required to correct identified deficiencies.

Response

An aggressive program to review alarm status and reduce the number of alarms that are normally in a lighted or alarmed condition during power operation has been implemented.

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)	**The work control system is not utilized to full effectiveness to improve the material condition of the plant.** A number of deficiencies in the material condition of systems, equipment, and components were not documented in the work control system.
Recommendation	Ensure that material deficiencies are documented. Emphasize to plant personnel the need to identify and report material deficiencies on a routine basis. Establish a program of detailed plant inspections, involving management and supervisory personnel, to identify material deficiencies.
Response	The need to identify and report material deficiencies has been emphasized to plant and contractor personnel. Inspections by management and supervisory personnel are now included in the program noted in the response to finding OA.3-3. These inspections will identify material deficiencies and allow management to evaluate the effectiveness of the work control system.

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 scheduling and coordination of forced outage activities need to be improved.** Key organizations were not well informed about daily activities, and as a result, manpower, equipment, and support resources were not efficiently utilized. The plant staff initiated some improvements during the evaluation.
Recommendation	Continue the effort to improve scheduling and coordination during forced outages. Refine and formalize the process to ensure that activities are well coordinated and that available manpower is effectively used.
Response	Several improvements have been implemented (e.g., "Plan of the Day" approach, and recognition of the need to effectively schedule the most limiting personnel resource as well as the planned work).

Additional recommendations aimed at more thorough advance planning are being refined for implementation for the Unit 2 outage, which is scheduled to begin in October 1982.

Finding (MA.3-2)

The administrative workload of first-line supervisors, mechanics, and technicians needs to be reduced through improvements in the planning process for job orders. Supervisors are currently responsible for job review, parts procurement, radiation work permit preparation, and job clearance preparation. This workload reduces the time available for supervisors to monitor plant conditions and work in progress.

Recommendation

Review the administrative workload of Maintenance Department Supervisors and Control and Instrument Department Supervisors with the goal of maximizing actual time spent supervising and monitoring plant activities. Based on the results of the review, take steps to reduce the administrative workload of first-line supervisors. The use of planners to process job orders and perform most of the pre-work tasks is one way of achieving this objective.

Response

A review of the administrative workload of Maintenance Department and Control and Instrument Department supervision will be conducted. Wherever possible, administrative tasks will be delegated to support staff members. The use of planners will be considered as a part of this review. The review is scheduled for completion by December 1982.

Finding (MA.3-3)

The following Good Practice was noted: The Maintenance Department uses sliding plexiglass panels containing one line system flow diagrams to track the status of material deficiencies. Outstanding job orders are denoted on the appropriate panel by circling the affected component in grease pencil and denoting the job order number and responsible foreman. This system provides instant reference for duplicate job orders and system material status and could be used as an effective tool for outage work planning.

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 is needed to ensure that AEP personnel and outside contractors follow good maintenance practices and plant procedures. Specific problems were noted in the control and follow-up of core drilling, the control and documentation of temporary electrical connections, and the use of a procedure other than the one specified on a plant-originated job order.

Recommendation

Review the programs administered by and the in-plant practices of the AEP contractor management force and of contractor personnel. Institute improved controls to ensure that work is performed in accordance with approved plans and procedures. Include observations of contract personnel as part of regular tours conducted by plant management personnel.

Response

The improved monitoring of work in progress, discussed in the response to finding OA.3-3, will aid in the implementation of applicable requirements. Management and supervisory personnel will observe the performance of all contract personnel during their routine plant tours.

Finding (MA.4-2)

The practice of accomplishing supplemental work under an approved clearance permit for another job needs to be formalized. Additional jobs are currently being worked under existing clearances by several methods, including simple verbal permission from the individual holding the clearance. Formal reviews for clearance adequacy and documentation of the additional work on the clearance are often not accomplished.

Recommendation

Determine the appropriate steps to be taken when work is to be added to an existing clearance. Formalize the desired practices and ensure that all plant personnel adhere to the formal procedure. Clearance review should be as thorough for the additional work as it was for the job for which the clearance was originated.

Response

Plant procedures governing clearance permits are being reviewed to ensure that proper procedures are specified for new work to be accomplished within the boundary of an existing clearance. Proper use of this procedure will be covered during training sessions by January 1983.

TRAINING AND QUALIFICATION

TRAINING ORGANIZATION AND ADMINISTRATION

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

Finding (TQ.1-1)	**The overall organization of training-related activities needs to be improved.** Departmental training programs are being developed independent of each other and independent of previously developed operations training materials.
Recommendation	Review the training programs of the various training groups for the purpose of identifying and consolidating materials to achieve common goals and objectives.
Response	The suggested comprehensive review has been started. The Training Section of the plant's Administration Department will coordinate the training and retain all training records of plant personnel even though that section may not conduct the training. Action on this item should be completed by May 1983.

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.

Finding (TQ.3-1)	**No formal method exists to ensure that accelerated licensed operator candidates will have sufficient in-plant experience prior to assuming licensed duties.**
Recommendation	A formal program that requires licensed operator candidates to demonstrate knowledge of plant systems and non-licensed operator duties prior to assuming control room duties should be developed and implemented.
Response	It was always intended that the accelerated licensed operator candidates complete all indoctrination, plant training, and systems check-offs, required for all other operators, prior to licensing. This element has been formally incorporated into the training program for accelerated licensed operator candidates.

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) A continuing training program is needed for maintenance personnel. Areas that are not being adequately covered are job-related plant equipment and system changes and applicable plant and industry operating experiences.

Recommendation Develop and implement a training and retraining program in job-related plant, equipment, and system changes and applicable plant and industry operating experience for maintenance personnel.

Response The training and retraining provided to maintenance personnel will be reviewed in light of the above recommendation by October 1982. An action plan to correct the items identified during this review will be provided in the six-month follow-up report.

Finding (TQ.5-2) A comprehensive initial and continuing training program is needed for performance technicians (specialized C&I technicians). This situation has been recognized, and an individual has been assigned to the project; however, no program currently exists.

Recommendation Develop and implement a comprehensive initial and continuing training program for performance technicians. Recommendations provided in the INPO document GPG-08, "Guidelines for Instrument and Control Technician Qualification," could be of assistance in developing a program.

Response This problem had been identified prior to the INPO evaluation, and, as noted in the finding, an individual has been assigned this project. A comprehensive training program for performance technicians should be formalized by December 1982. In the interim, on-the-job training in basic instrument skills is being conducted for the three technicians that have recently been hired.

GENERAL EMPLOYEE TRAINING

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

Finding (TQ.7-1)	**The general employee training program needs improvement to provide workers with adequate knowledge and skills to comply with plant safety procedures and practices.**
Recommendation	Modify the general employee training program and training materials to include plant-specific subject matter. Identify and correct errors in the videotapes used for general employee training.
Response	The general employee training program is under constant evaluation for additions, improvements, and changes. Several new films and lectures, primarily aimed at new employees, but applicable to update training as well, are currently being developed and will provide knowledges and skills necessary to comply with plant safety procedures and practices. These will be implemented by March 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)	A comprehensive and continuing training program is not implemented for reactor, computer, and performance engineering personnel. A firm commitment is needed to specific skills training, particularly in the reactor engineering group. A training program is under development.
Recommendation	Complete and implement the proposed training programs to ensure that technical staff personnel receive specific skills training in their areas of responsibility.
Response	The training program discussed above should be implemented by May 1983.

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.

Finding (TS.3-1)

The process for review of operating experiences needs improvement in several important areas:

a. An effective program is needed to ensure comprehensive evaluation of Significant Operating Experience Reports (SOERs).

b. A formal status system is needed for tracking industry and in-house operational assessment corrective actions to completion.

c. Provisions are needed for timely notification to other utilities of significant in-house events with potential generic implications.

d. Provisions for conducting routine evaluations to enhance program effectiveness are needed.

Recommendation Improve the operating experience review program to correct the items described above. Section TS.3 of INPO's "Performance Objectives and Criteria for Plant Evaluations," dated January 1982, and the INPO Significant Event Evaluation and Information Network (SEE-IN) program description, dated January 1982, are references that could be of assistance.

Response Procedures for the conduct of the operating experience review program will be modified to correct the items identified above. Documents referenced in the recommendation will be considered. This action should be completed by January 1983.

Finding (TS.3-2) **Action on some recommendations included in SOERs has not been completed.** Recommendation status for SOERs 80-1 through 80-6 and 81-1 through 81-17 is as follows:

Number of Recommendations	Action Taken
53	Satisfactory
29	Not applicable
10	Pending
2	Need Further Review

The following recommendations are pending action:

SOER Number	Recommendation Number
80-1	1, 2
80-2	1, 2
81-6	1, 1a, 2
81-15	2a, 2b, 2c

The following recommendations need further review:

SOER Number	Recommendation Number
81-9	2b
81-17	2

Recommendation Initiate further review or complete action as appropriate on SOER recommendations listed above. Provide the status of each recommendation in the response to this report.

Response SOERs will continue to be evaluated to identify appropriate corrective actions under the operating experience program. The results of completed evaluations will be provided in the six-month follow-up report.

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)

Information on plant system changes is not always made available to operators by the time that modifications are placed in service. Changes to control room drawings and procedures and training of operators are sometimes completed after modified systems or equipment are returned to service.

Recommendation

Revise the design change and plant modification program to ensure that controlled as-built drawings are available to the operators in the control room area, that procedures are updated, and that necessary training has been completed prior to placing modified systems in service.

Response

This problem was identified nearly two years ago, and a design office was established at Cook Plant. Since that time, this design office updated and is maintaining nearly 1,150 "OP" elementaries, one-lines, and flow diagrams. The necessary changes to the design change and plant modification programs are being identified by a review that should be completed by October 1982. Program revision and implementation should be completed by February 1983. Interim instructions have been issued by the plant manager that modified systems are not to be put into operation prior to revision of control room drawings/procedures without specific plant management involvement and direction.

Finding (TS.4-2)

The design change and plant modification program needs improvement in the following important areas:

a. Detailed installation and testing instructions are not always included in design change packages when they are needed.

b. Formal reviews are not included in the areas of fire protection, ALARA, and in-service inspection (ISI).

c. Final plant modification drawings are not revised and issued in a timely manner.

Recommendation

Revise the design change and plant modification programs to ensure the following:

a. Enough detailed information should be included in the modification package to enable installation and testing to be satisfactorily understood and accomplished.

b. Formal reviews for fire protection, ALARA, and ISI should be included.

c. Drawings and documentation reflecting plant changes should be updated in a timely manner.

Response The procedures controlling design change and plant modification programs are being reviewed. Modifications to correct review items, in addition to those identified above should be completed by March 1983.

Finding (TS.4-3) **Equipment substitutions are being performed under the job order procedure rather than through the plant modification program.** Use of this method bypasses the technical review and approval process that such changes should receive.

Recommendation Develop a method to ensure that all changes are performed under the plant modification program so that equipment and other changes receive a technical review to verify that the original design and code requirements are met.

Response All job orders received by the Maintenance Department are subjected to review prior to issuance by the Maintenance Superintendent. One of the purposes of that review is to ensure that design changes are performed in accordance with approved procedures. Also, prior to issue, all job orders undergo a second review by a Maintenance Department quality control implementation coordinator. During that review, the scope of work is evaluated to specifically determine whether or not the request constitutes a change in design. Documentation of that review is provided by initialing the "RFC NO." blank on the job order form. A review of these procedures will be conducted in light of the finding to ensure that the mechanism in use does ensure that work requests do not bypass the design change review process when applicable. The review will be completed by October 1982. A date by which necessary changes will be implemented will be provided in the six-month follow-up report.

Finding (TS.4-4)	Some electrical jumpers and lifted wire/blocked relays have been in place for prolonged periods. This reflects the use of a temporary plant change mechanism to effect permanent changes that are not shown in plant drawings.
Recommendation	Conduct a review of the temporary jumper and lifted wire/blocked relay log on a periodic basis to ensure that items no longer needed are removed and that the number of active items is kept to a minimum. Entries in the log exceeding a specified time period should be considered for processing as design changes.
Response	Plant Manual Instruction (PMI) 2140 requires that no entry in the temporary jumper and lifted wire/blocked relay log will be more than three months old without a design review. These requirements will be implemented. Electrical jumpers, lifted wires, and blocked relays that are no longer required have been eliminated.

PLANT EFFICIENCY AND RELIABILITY MONITORING

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

Finding (TS.6-1)	The existing plant performance engineering program needs improvement in that collecting, trending, and analyzing of secondary plant data are not formally established.
Recommendation	Formalize the performance engineering program to more effectively utilize the data currently being collected. Conduct a review to determine additional parameters or trends and analysis that should be included in the program.
Response	Formalization and improvement of the plant performance engineering program is a long-term goal scheduled on a priority and manpower availability basis. A status of this program will be provided by February 1983 along with a planning schedule to implement the overall formalized procedure.

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)

Plant personnel and contractors do not always comply with appropriate radiological protection procedures and practices. Examples noted include the following:

a. failure to survey for personnel contamination when exiting contaminated areas

b. smoking and eating in radiologically controlled areas

c. failure to wear required protective clothing when decontaminating tools

d. improper removal of protective clothing and use of step-off pads

e. failure to wear personnel dosimetry properly

f. entering a locked, high radiation area without a dose-rate instrument

Recommendation

Ensure that line managers and supervisors, particularly in maintenance and operations, promote and enforce adherence to approved radiological protection procedures and practices. The need for compliance with radiological protection procedures and practices should be emphasized during general employee training and retraining.

Response

In an effort to help correct the types of problems outlined in the finding, the following specific steps have been taken in the radiation protection area:

a. Additional frisking equipment has been made available to make such checks more convenient.

b. Shielded frisking stations have been installed in areas where the background was too high or too variable to permit meaningful frisking.

c. Additional training has been provided to plant personnel on the correct use of friskers.

d. Signs have been added at the exit points from contaminated areas reminding all personnel of the need to perform frisking upon exiting the area.

e. Frisking procedure instructions have been posted at frisker stations.

f. Methods have been developed to issue currently calibrated dose-rate instrumentation to all plant groups as well as contractor personnel.

g. Locations where dose-rate instrumentation is required for entry have been posted. These requirements are also included on radiation work permits issued for work in these areas.

The need for good radiological protection practices has been and will continue to be stressed to the Operations Department in operating memos, Operations Department staff meetings, and in training conducted during "fifth shift" training sessions by the shift supervisor and other supervisory personnel.The supervisory personnel in the Operations Department are now determining how to best ensure that Operations Department personnel follow appropriate radiological protection procedures.

To re-emphasize the importance of following radiological protection procedures and practices, the Training Coordinator has discussed this recommendation with all the training instructors and followed these discussions with a letter to the training instructors directing them to verbally emphasize the importance of following procedures and radiation protection practices during general employee training and retraining.

To re-emphasize this concern in the Maintenance Department, this finding was discussed in a meeting attended by all Maintenance Department personnel. The need for good radiological protection practices will continue to be stressed in department memos, staff meetings, and periodic training.

The development of an overall, revised radiation protection program and an ALARA program is currently under study and was awarded to a contractor in June 1982. In the interim, informational meetings were held within the Technical Department. These meetings emphasized methods of ensuring appropriate radiological protection, specifically covering each of the areas found during the INPO evaluation. These meetings stressed not only the need for adhering to radiological protection procedures and practices, but the overall management commitment and the seriousness of the situation.

Finding (RP.1-2)

A number of activities important to radiological protection (RP) are not being performed. Examples include the following:

a. On several occasions RP personnel were not available to support the requests of maintenance and operations personnel.

b. The RP Supervisor-Training has not had adequate time to complete the RP Technician Training Program because of a higher priority to support the outage.

c. The weekly routine RP survey for the week of March 15, 1982 was not completed.

d. Investigations of significant differences between TLDs and pocket ionization chambers are not conducted.

Recommendation

Evaluate the manning level and workload of the RP organization to determine if additional personnel or reassignment of responsibilities are needed. It is recognized that the plant has an ongoing program to support the training of RP technicians at a community college.

Response

This problem had been identified prior to the INPO evaluation. An evaluation of staffing levels and work load of the existing radiological protection organization has been performed with the results forwarded to the plant manager on March 24, 1982. The need for additional personnel was recognized and addressed. Temporary radiation technicians have been hired to fill some needs for several years. Many professional level health physics personnel have been interviewed and several offers are outstanding. One has accepted the offer and is scheduled to begin work in June 1982. Two additional health physics technician positions were filled by associate degreed health physics people prior to June 1, 1982.

Like many other stations, Cook has had difficulty hiring trained technicians. Consequently, the Cook Plant Administration Department has pioneered a Co-op Student Intern Program for RP technicians. Nine Berrien County high school students who graduated from high school last year were selected through a competitive scholarship program. These students were given summer training and employment as well as 75 percent of a tuition scholarship to a local technical college that will result in an associate degree in nuclear technology with an emphasis on health physics. The students completing this program are under contract and have a three-year work obligation to this facility. Thus far, the program has been completely successful, and at the present time, the Personnel Department is working closely with all area high schools in selecting ten additional co-op student interns for this year's program.

Finding (RP.1-3)

The reporting of violations of RP practices and procedures needs to be improved so that problems can be identified and corrected and data trended. A plant condition report currently exists for reporting unusual events and conditions; however, this report was infrequently used to report this type of problem in 1981.

Recommendation

Develop and implement a reporting system for violations of RP practices and procedures that ensures that managers and supervisors are aware of problems and appropriate corrective actions are taken.

Response

A health physics engineer, on-loan from AEPSC, is currently being utilized to develop a new procedure to specifically address the reporting and follow-up of radiological investigations for deficiencies not associated with plant equipment. This procedure should be developed and implemented by January 1983.

GENERAL EMPLOYEE TRAINING IN RADIOLOGICAL PROTECTION

PERFORMANCE OBJECTIVE: 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.

Finding (RP.3-1)

The general employee training (GET) program needs improvement to provide workers with adequate knowledge and skills to comply with radiological protection procedures and practices. Weaknesses exist in the following areas:

a. Training is not comprehensive in subjects such as posting of radiologically controlled areas, use of radiation work permits, tool and equipment decontamination, work rules for contaminated areas, use of step-off pads, and use of dose-rate instruments.

b. Trainees are not required to demonstrate practical abilities such as personnel contamination monitoring, putting on and removing protective clothing, and using step-off pads.

c. The examination used to qualify trainees does not adequately measure the level of knowledge of the trainees.

Recommendation

Compare the knowledge and skills required by workers in the plant to those presented in the GET program and make appropriate changes and additions. Expand the GET program to include

practical ability demonstrations. Upgrade the GET examination to ensure that it accurately measures the knowledge and skills essential for worker safety in the plant.

Response — The required training will be developed in Phase III of the ALARA Program, which is scheduled to begin in April/May 1983. In the interim, personnel will be required to demonstrate the practical abilities and the GET examination will be upgraded.

EXTERNAL RADIATION EXPOSURE

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

Finding (RP.4-1) — **The following Good Practice was noted: A real-time system is used for maintaining and continuously updating exposure records and radiation work permits.** The system is an excellent method for tracking exposure and maximum permissible concentration (MPC) hours and for cross-referencing radiation exposure allowances with time and the jobs to be performed.

INTERNAL RADIATION EXPOSURE

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

Finding (RP.5-1) — **The whole-body counting contractor is not required to notify the plant promptly if significant internal contamination is identified during whole-body counting.** The plant receives an immediate local printout of the relative activity of Iodine-131, Cobalt-58, and Cobalt-60; however, this does not provide sufficient information to identify uptakes of other isotopes so that a timely investigation into the cause can be initiated.

Recommendation — Require the whole-body counting contractor to notify the plant promptly when significant internal contamination is detected, or provide the plant with local printouts of all important radioisotopes.

Response — Discussions are being held with the supplier of the whole-body counter system currently leased by D. C. Cook to ensure that the

plant will be notified when significant internal contamination is detected or, at least, provided with local printout capability for specified important isotopes. In addition, proposals are presently being considered for leasing the services of a different counting contractor to provide complete on-site reporting in minutes following the counts. It is intended that this evaluation will be completed prior to completion of the Unit 1 refueling outage.

These discussions and evaluations will include the INPO recommendation under RP.5-3.

Finding (RP.5-2)

Investigations are needed to determine the reasons for low levels of Iodine-131 uptakes in a number of workers during 1981 and for positive Iodine-131 whole-body counts on individuals who had not entered an area where this isotope could be encountered.

Recommendation

Evaluate the low level Iodine-131 uptakes to determine if additional surveys and protective measures are necessary. Determine the source of the Iodine-131 peaks in the whole-body counts of those individuals not exposed to this isotope, and take appropriate corrective action to prevent this from recurring.

Response

One of the major assignment areas for additional health physics personnel is the area of dosimetry support. Included in this assignment will be the analysis of whole-body count results as well as the development and implementation of a quality control program to ensure subsequent quality control on whole-body investigations. The recommendations of Finding RP.5-3 will be incorporated into this quality control program. A scheduled implementation date will be provided in the six-month follow-up report.

Finding (RP.5-3)

A quality control program is needed to evaluate the accuracy of whole-body counting results.

Recommendation

Develop and implement a quality control program for the whole-body counting system that includes the following:

a. simulation of periodic, artificially high whole-body counts to ensure that the contractor's system of reporting significant internal contamination is reliable

b. verification of the contractor's calibration results through the use of a phantom or other suitable method

Response Refer to the responses to RP.5-1 and RP.5-2.

SOLID RADIOACTIVE WASTE

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

Finding (RP.7-1) **Further efforts to reduce the generation of solid radioactive waste are needed.** Examples include the following:

a. Nonradioactive wastes such as newspapers, packing material, boxes, etc., are not adequately restricted from radiologically controlled areas.

b. Waste material is not segregated into contaminated and noncontaminated waste in the radiologically controlled areas.

Recommendation Increase efforts to reduce the volume of radioactive waste generated. Consider the following:

a. Minimize the introduction of unnecessary materials into radiologically controlled areas.

b. Segregate contaminated trash from noncontaminated trash in radiologically controlled areas.

c. Emphasize solid radioactive waste reduction methods in the general employee training and retraining programs.

Response The plant acknowledges the need to improve controls aimed at reducing the introduction of unnecessary material into radiologically controlled areas. Means for doing so are under development. The segregation of contaminated trash from non-contaminated trash in radiologically controlled areas has been evaluated and is being performed in specific areas. Continued evaluation of this area is scheduled.

A formalized training program for the preparation and reduction of solid radioactive waste has been presented in the past year to all personnel involved with the handling of radioactive waste. This will be expanded to all plant personnel. The plant agrees with and will implement the recommendation to include this in general employee training and retraining by February 1983.

PERSONNEL DOSIMETRY

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

Finding (RP.8-1) **There is no quality control program to verify the accuracy of the results obtained by the contractor who evaluates the thermoluminescent dosimeters (TLDs).**

Recommendation Develop and implement a quality control program that includes the following:

a. submitting blind, spiked TLDs to the contractor with the monthly personnel TLDs

b. acceptance criteria for the accuracy of the contractor's spiked TLD results

c. actions to be taken if the acceptance criteria are not met

Response A program for performing quality control checks on the TLD contractor will be developed and implemented by January 1983.

RADIOACTIVE CONTAMINATION CONTROL

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

Finding (RP.9-1) **Increased efforts are needed to control radioactive contamination.**

Recommendation The plant's contamination control program should be evaluated and upgraded where necessary. Specific recommendations are as follows:

a. Control and mark bags of contaminated trash and material used in radiologically controlled areas.

b. Mark all tools and equipment with fixed contamination as required by plant procedures to preclude their use in uncontrolled areas of the plant.

c. Improve controls over the removal of material from marked contamination areas by personnel who are not wearing protective clothing.

d. Control material stored in marked contaminated areas so that it does not overflow into areas that are not contaminated.

e. Reduce the number of contaminated areas in the plant.

f. Enforce adherence with contamination control procedures.

Response

Many of the mechanisms to improve contamination control already exist. In addition, many additional contamination control measures have recently been put into effect. (see response to RP.1-1) The items identified above will be evaluated as part of an overall control upgrade, and appropriate corrective action will be taken by March 1983.

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)

The plant chemistry program needs upgrading. A number of important elements of a comprehensive chemistry program are not being performed adequately.

Recommendation

Conduct a comprehensive review and upgrade of the plant chemistry program. Consider the following:

a. Ensure that chemistry supervisors are adequately involved in supervision of routine laboratory and chemistry activities.

b. Evaluate and improve the performance in programs such as laboratory quality control, laboratory preventive maintenance, bulk chemical control, plant chemistry safety inspections, chemistry procedure and equipment upgrade, and evaluation of chemistry results for trends and problems.

Response

A comprehensive review and upgrade of the plant chemistry program is being conducted. The items identified above will be included in this effort, which should be completed by December 1982. An evaluation of the Chemical Section's staffing indicates a need for upgrading, and recommendations to this effect have been submitted to the plant manager for resolution. In addition, chemistry supervisory personnel have been heavily involved in the design, construction, pre-operational testing, and implementation of new systems mandated by past TMI requirements. This heavy involvement has been eased, and the supervisors now actively manage laboratory and chemistry activities. Efforts will be made in the future to ensure that extra assignments do not detract from the supervisors commitment to chemistry activities management.

Finding (CY.1-2)

Chemistry department material and design deficiencies identified by plant inspections, audits, or other means need to be corrected in a more timely manner. Examples of some of these deficiencies are as follows:

a. An automatic neutralization system for the turbine building sump is needed.

b. A needed ventilation system in the main steam aisleway does not exist.

c. The blower in the primary sample hood ventilation system has not operated for six months.

d. Safety showers and eyewashes are needed in a number of areas throughout the plant.

Recommendation Determine the reasons for long delay times between problem identification and resolution, and take appropriate action to correct these problems.

Response The problems listed in the finding had been identified and certain actions taken prior to the INPO evaluation. The review and revision to the design change and plant identification programs referenced in the response to TS.4-1 will address the reasons for the long delay times between problem identification and resolution. This review will be completed by October 1982. Efforts will be made to minimize delays in the correction of identified problems in the future.

Finding (CY.1-3) Compliance with chemistry procedures and requirements is not always enforced; for example:

a. The laboratory quality control procedure is not utilized by the chemistry department.

b. Some analyses were not performed according to procedures.

Recommendation Review chemistry procedures with chemistry department personnel and require that procedures be followed.

Response The laboratory quality control procedure has been reviewed and is currently in the revision process. Review was based on items highlighted during the INPO evaluation and comparison to INPO guidance for laboratory quality control programs. A comprehensive program designed to meet all guidance and requirements in this area and to ensure the quality of laboratory analysis data will be in effect by October 1982. This overall program will include all laboratory procedures and analyses and should help to ensure that all procedures are followed properly by all personnel involved.

An AEP companywide QA program for the auditing and surveillance of power plant chemical laboratory performance has recently been completed and audits are starting now; Cook Plant is included.

Finding (CY.1-4)

An effective program for the safe control, storage, and use of bulk chemicals and hazardous materials is not in place; for example:

a. Bulk chemicals and unlabeled or mislabeled chemicals are stored throughout the turbine and auxiliary buildings.

b. Chemicals and resins not used by the plant are stored in plant operating and storage areas for long periods of time.

c. Chemicals that react violently when they come in contact with each other are routinely stored and used together.

Recommendation

Establish a program to provide for safer and more effective control, storage, and use of bulk and hazardous chemicals.

Response

The chemistry section prepared guidelines for the use and storage of chemicals throughout the plant to ensure the proper labeling and storage of all chemicals on site. These guidelines will be established through instruction and be issued to all personnel by December 1982. Considerable improvement has been made in the storage of reagent chemicals in the chemistry laboratories.

CHEMISTRY PERSONNEL QUALIFICATION

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

Finding (CY.2-1)

The following Good Practice was noted: A comprehensive and effective chemistry training and retraining program has been developed for the chemistry technicians. The training program is five months in duration and covers such items as chemistry theory, plant systems, procedures, instrumentation, and laboratory and sampling techniques.

The retraining program is a continuing program presented on a monthly basis. It covers the material covered in the basic training program, as well as changes in plant procedures and operation.

A position has been established within the chemistry department to implement and maintain the program.

Finding (CY.2-2)	Chemistry supervisors (foremen) are not required to maintain their level of knowledge to the same level as the technicians they supervise.
Recommendation	Either require chemistry supervisors to attend the monthly retraining program for technicians or take other action to maintain their level of knowledge.
Response	All Chemical Section supervisors are now being trained and retrained as part of a comprehensive training program.

CHEMISTRY CONTROL

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

Finding (CY.3-1)	Waste material such as solid waste, oil, water, and antifreeze are collected and stored in drums that previously contained such items as hydrazine (N_2N_4) and sodium hydroxide (NaOH). The labels on these drums have not been changed to reflect the current contents.
Recommendation	Develop a program to control the reuse of containers for waste collection. The program should ensure that containers are relabeled to reflect actual contents and that containers are properly stored until disposal.
Response	The subject of use and reuse of chemical drums was addressed in memos issued after the INPO evaluation to all plant departments as well as AEP construction personnel. In addition, specific guidelines were issued to all contractors on site. Adherence to the guidelines referenced in these letters should eliminate many of the INPO concerns. The letter essentially indicates that drums are verified empty prior to use, establishes a labeling requirement for empty drums, eliminates reuse of hydrazine drums, requires permanent marking to be made on drum labels, and requires all drums used for waste collection to be properly labeled. Responsibility for this area remains with each department and all contractors. The item will also be brought up with the In-Plant General Safety Committee. Inspections to ensure that drums have been properly labeled will be performed by September 1982. A formal plant instruction will be developed by December 1982 to replace memos and guidelines on this subject.

Finding (CY.3-2)

A program to provide comprehensive in-line monitoring of secondary chemistry parameters such as sodium, hydrazine, pH, oxygen, and conductivity is needed. Conductivity and oxygen in-line instruments are installed; however, these instruments are not regularly monitored or calibrated. In-line instruments to monitor some of the above parameters have been purchased, but not installed.

Recommendation

Install and use in-line monitors to identify trends and problems in key secondary parameters.

Response

All of the instrumentation to provide in-line monitoring capabilities have been purchased, and the dissolved oxygen and hydrozine instruments are operational. Some of the conductivity instrumentation is now in service. The pH instrumentation should be operational by January 1983. The sodium instrumentation should be operational by June 1983.

As part of a revised quality control procedure, cell constants will be determined every refueling outage and appropriately logged on a data sheet to provide a log of all checks performed.

Conductivity readings are recorded and routinely monitored in the control room. Additionally, chemistry technicians on shift record the values on data sheets every eight hours. This data will be compared and trended to identify potential problems.

Finding (CY.3-3)

Condenser in-leakage is high, resulting in the addition of excessive amounts of hydrazine to the condensate system . The practice of exceeding vendor specifications for hydrazine concentration could possibly contribute to material problems in the condensers, steam generators, and other major secondary components.

Recommendation

Develop an effective program to identify and repair sources of air in-leakage into condensers.

Response

Reduction of condenser air in-leakage has been a major role of plant personnel. Coordinated efforts between the Performance and Chemical Sections of the Technical Department and Operations Department personnel have, in the past, been successful in reducing air inleakage to acceptable values. Continuing efforts are in progress to reduce these values to the minimum utilizing a variety of techniques, including helium leak testing equipment recently purchased.

LABORATORY ACTIVITIES

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

Finding (CY.4-1)	**An effective quality control (QC) program for laboratory analyses and chemicals is needed.** A QC program has been developed that addresses important areas, but it has not been implemented.
Recommendation	Implement and maintain an effective chemistry QC program. Include realistic shelf life controls for reagents and standards.
Response	The QC procedure has been reviewed and updated to ensure that all guidelines for laboratory quality control programs were included. Each item of concern has been addressed, and the revised program should be in effect by September 1982.

Finding (CY.4-2)	**A method to control, monitor, and evaluate laboratory demineralized water purity is needed.**
Recommendation	Establish a method to control, monitor, and evaluate laboratory demineralized water purity. A common acceptable method is to use an in-line conductivity cell capable of detecting to below .1 umhos.
Response	Monitoring of laboratory demineralized water purity was recognized in the past, and an in-line conductivity cell had been installed in each laboratory demineralized water system. These cells were removed to conduct a test program in the stator cooling system. Additional cells will be purchased and installed in all laboratory demineralized water systems by December 1982.

Finding (CY.4-3)

Procedures and techniques used in all water chemistry analyses need an in-depth review and improvement. Problems identified include the following:

a. The gross beta analysis results need correction for self-absorption.

b. Fluoride test results are inconclusive in that a faulty probe was shown to yield the same results as an in-specification sample of low concentration.

c. Test analyses conducted on fluoride standards in the range of the technical specification limits showed a number of errors.

d. The chloride analytical method currently used does not possess the accuracy and precision to detect concentrations of chlorides at and below the technical specification limit.

e. The iron and copper analytical methods do not have the sensitivity to detect the most limiting vendor specifications.

f. The pH meters are calibrated using only one buffer. This does not ensure linearity.

g. Sodium analyses are conducted using standards that are not reliable because of their age.

Recommendation Perform a comprehensive review of the techniques and procedures used in water chemistry analyses. Correct deficiencies identified both by this review and by the above finding.

Response Evaluation of laboratory procedures and techniques will be conducted on an ongoing basis. The following is offered in response to the individual items mentioned above:

a. Self-absorption correction for gross beta-gamma counting is not being performed. The effect of this on the accuracy of analysis will be determined and the use of correction factors commenced as appropriate by December 1982.

b. A review of the fluoride analysis techniques and procedure will be conducted and corrections made by December 1982.

c. A training program will be conducted with all chemistry technicians to upgrade their techniques and analysis accuracies. QA checks will be developed to periodically check technician performance as part of the revised quality control procedures. This action will be completed by December 1982.

d. Tests of chloride analysis methods using mercuric nitrate titration, mercuric thiocyanite colorimetric, and specific ion techniques, will be conducted to determine analysis sensitivity and technician accuracies. Standards, with values unknown to the technician, will be utilized. This action will be completed by October 1, 1982. Further action will be taken as appropriate, as a result of information learned. Quality control checking with standard chloride solutions will be included in the revision to the laboratory QC procedure.

e. Methods to detect lower levels of iron and copper are being evaluated. A suitable replacement method should be implemented by December 1982.

f. The need to utilize more than one buffer to calibrate pH meters, as discussed in the American Society for Testing and Materials publication D-1293-78, will be evaluated and procedures modified as appropriate.

g. The use of low range sodium standards will be modified to ensure that only standards within a reasonable shelf-life are used. Checks to ensure that correct standards are used will be included as part of the quality control procedure.

Finding (CY.4-4)	**A preventive maintenance program for laboratory material and equipment is needed.**
Recommendation	Establish a preventive maintenance program for laboratory material and equipment considering manufacturer's recommendations.
Response	All vendor instruction manuals are being reviewed to develop a preventive maintenance guideline that will be scheduled via the laboratory surveillance computer program. This item should be completed by January 1983.

CHEMICAL AND LABORATORY SAFETY

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

Finding (CY.5-1)

Numerous potentially hazardous chemistry conditions exist throughout the plant. Examples include the following:

a. Eating and drinking are permitted in laboratories containing toxic chemicals.

b. A number of safety hazards are evident in the room in the warehouse that is used for laboratory chemical storage. There are no drains or fire alarms in the room, and it has no ventilation system. Extremely volatile organics, strong acids and bases, class A combustibles, plastics,

resins, and other chemicals are stored together in a very small area.

c. Many toxic, corrosive, and carcinogenic materials are stored near the construction eating area. Workers were observed using containers of these chemicals for tables and chairs.

d. Areas containing toxic, hazardous, and carcinogenic chemicals are not routinely posted as to the hazards and precautions.

e. Chemicals are stored in the unit 1 and 2 main steam aisleway, which is not ventilated. In addition, the combination of chemicals used in the area constitutes a hazard.

Recommendation Correct the safety hazards identified. Establish a formal program to identify and correct potential chemical hazards throughout the plant on a continuing basis. Take steps to improve the awareness of plant personnel, especialy supervisors, of the safety hazards associated with the storage and use of chemicals.

Response A formal program to identify and correct potential chemical hazards will be developed by December 1982. Employee training programs will be modified to ensure that all plant personnel understand the safety hazards associated with the storage and use of chemicals. The specific hazards referenced in the recommendation are addressed as follows:

a. Eating and/or drinking are no longer permitted in any plant laboratory. This policy was distributed in writing to all Chemical Section personnel.

b. As referenced in CY.1-4, a complete review of the room utilized for laboratory chemical storage has been performed. Major changes have been made with considerable quantities of these materials moved to the storeroom in the new chemical laboratory. In addition, a plant modification has been initiated to install drains in the new laboratory storeroom. Separation of all inorganics, acids, bases, combustibles, etc., is also being maintained. In addition, those chemicals that are not utilized on a periodic or frequent basis will be eliminated.

c. A review of chemical storage requirements will be conducted as discussed in CY.1-4. In the meantime, the construction workers eating area, has been moved away from the chemical storage area, and workers have been advised to not use chemical containers as tables, chairs, etc.

d. Posting requirements for storage areas for toxic, hazardous, and carcinogenic chemicals will be addressed in the guidelines issued for storage of bulk chemicals. In addition, a review will be conducted throughout the plant by September 1982 to ensure that all chemicals and chemical storage areas are properly posted.

e. Completion of RFC 12-2135 will be expedited to provide adequate ventilation in this area. A safety review of the current chemical storage arrangement was completed to determine if the combination of chemicals stored in this area constituted a safety hazard. Appropriate corrective action will be initiated by October 1982 to correct items identified.

APPENDIX I

Summary of Outstanding Response Action from Previous Evaluation (1980)

Organization Structure
(INPO Procedure OA-102, Rev 2)

2. **Finding** (Ref. Criterion B)
Position descriptions are available for most positions; however, these have not been developed based on job analysis, and they are not generally used for performance evaluations.

Recommendation
Position descriptions should be updated based on a job analysis for each position. These position descriptions should be utilized as a management tool for defining job qualifications, hiring, training, performance appraisal, and promotion of individuals at each position.

Note: This finding and recommendation apply to INPO procedures OA-108, TQ-211, OP-303, MA-401, and RC-501, criteria A, F, B, C and E respectively. Each of these areas have requirements based on job analysis.

Response
The company recognizes that the industry has a need for common job analysis for each position and will be participating with INPO in an industrywide effort to update and revise position descriptions based on job analysis. The resulting new position descriptions will be more fully utilized as a management tool for defining job qualifications, hiring, training, and performance appraisals.

Status
Revised or new position descriptions for all plant personnel are being developed and should be completed by September 1982.

ADMINISTRATIVE CONTROLS
(INPO Procedure OA-103, Rev.1)

Finding (Ref. Criterion E)
Although many administrative controls exist in the form of instructions at various levels, they are not always followed nor are they consistent. Several examples are noted later in this report in the areas of Operations and Technical Support.

Recommendation
Plant management should review the various plant instructions, including those dealing with logs, operational surveillance, and housekeeping with respect to adherence and consistency. Appropriate corrective measures should then be instituted and maintained.

Response
The plant has started a systematic review of various plant instructions and will take corrective actions to ensure adherence to their requirements and consistency in their application. This will be completed by July 1, 1982.

Status

All Operations Department procedures and instructions were updated by May 1, 1982. Additional procedure and instruction updates will be completed by September 1982.

RADIATION PROTECTION AND CHEMISTRY, ORGANIZATION AND ADMINISTRATION

(INPO Procedure RC-501, Rev.1)

2. **Finding** (Ref. Criterion D)

A training/retraining program has not been fully developed for health physics personnel. A program under development at the first-line supervisory level is not being consistently implemented.

Recommendation

The health physics training and retraining program requires further development and formal implementation. This program needs to be strengthened through the addition of formal classroom training on a regularly scheduled basis.

Response

The advanced training and retraining programs for health physics personnel have been reviewed and will be formally implemented with the hiring of permanent staff. In the interim, the contract personnel being utilized have received the necessary training to perform their functions.

Status

The health physics training and retraining programs are being developed and were implemented by July 1982.

ALARA PROGRAM

(INPO Procedure RC-502, Rev.1)

Finding (Ref. Criteria A, B, C, D, and E)

None of the criteria in this procedure were met because there is no formal ALARA program, although some good ALARA practices were noted during the evaluation. Personnel in general were aware of the need to keep exposures low whenever feasible.

Recommendation

The company should develop and implement a formal ALARA program.

Response

I&M agrees with the recommendation and will develop a formal ALARA program. Development will begin immediately, and INPO will be provided a progress report every six months until completion.

Status

Corporate Headquarters personnel are currently evaluating contractor bids to develop an ALARA program.

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 Management Assessment and Quality Programs

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

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.

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.