
1982 Evaluation

**Indian Point 3
Nuclear
Power Plant
Power Authority
of the State of
New York**

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EVALUATION

of

INDIAN POINT 3 NUCLEAR POWER PLANT

Power Authority of the State of New York

March 1983

SUMMARY

INTRODUCTION

The Institute of Nuclear Power Operations (INPO) conducted an evaluation of the Power Authority of the State of New York's (PASNY) Indian Point 3 Nuclear Power Plant during the weeks of November 8 and 15, 1982. The station is located on the Hudson River in Buchanan, New York. The station began commercial operation in August 1976.

PURPOSE AND SCOPE

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

The INPO evaluation team examined station organization and administration, operations, maintenance, technical support, training and qualification, radiological protection, and chemistry. The team also observed the actual performance of selected evolutions and surveillance testing. Corporate activities were not included in the scope of the evaluation, except as an incidental part of the station 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 station is being operated in a safe manner by well qualified and experienced personnel.

The following beneficial practices and accomplishments were noted:

The cooperative attitude of all levels of plant personnel in supporting the radiological protection program is evident.

A good chemistry program has been developed and is effective in controlling plant chemistry.

Data from the vibration monitoring program are trended in an effective manner to predict potential problems.

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

Deficiencies in training programs reflect a need for improvement.

The material condition of the plant requires increased attention.

Increased emphasis should be placed on holding individuals accountable for assigned responsibilities.

Weaknesses in engineering support need to be addressed, such as temporary modification review, control of plant drawings, and the operating experience review program.

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 PASNY 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 PASNY management at an exit meeting on November 18, 1982. Findings, recommendations, and responses were reviewed with PASNY management on February 17, 1983. Responses are considered satisfactory.

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

The evaluation staff appreciates the cooperation received from all levels of the Power Authority of the State of New York.

POWER AUTHORITY OF THE STATE OF NEW YORK**Response Summary**

The Power Authority of the State of New York is firmly committed to the safe, reliable operation of its nuclear power plants. We are pleased to note that INPO's review of our operation found that this goal was being met.

INPO's recommendations form a valuable contribution to PASNY's long-term effort to achieve a higher standard of excellence in operation. As is noted in the detailed report, many of the recommended actions were recognized before the evaluation and were already receiving attention. Nevertheless, the evaluation was most helpful to focus attention and priorities. In addition, the dialogue established between the INPO evaluators and plant staff provided several useful suggestions on ways to do the job better.

As is discussed in the responses to individual findings, all recommendations made by INPO will be evaluated. Where necessary, program revisions will be incorporated, or where existing procedures are considered fully adequate, increased discipline will be applied in following them. PASNY notes in particular the areas for improvement considered most important by INPO and will ensure that appropriate corrective actions are taken.

The Authority intends in all its responses to provide remedial action that takes the underlying issues implied by the recommendations into account. INPO will be provided with the reports requested, which document accomplishment of the recommendations.

ORGANIZATION AND ADMINISTRATION

STATION ORGANIZATION AND ADMINISTRATION

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

- Finding (OA.1-1)** **Responsibility and accountability for performance of some plant activities need to be more clearly defined and enforced.** Problems observed in several areas including housekeeping, material condition, and training indicate a need for more decisive management action to correct known problems.
- Recommendation** Review assignments of responsibility for performance, and ensure that responsibilities are clearly assigned in important areas, particularly those where problems are known to exist. Hold designated persons accountable for performance in their assigned areas of responsibility.
- Response** Individual performance responsibilities will be reviewed by September 1983 to ensure clear assignment of responsibilities. The station management has and will continue to hold individuals accountable for their performance.
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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)** **Quality assurance (QA) audits and inspections often do not assess program effectiveness.** Field inspections are sometimes not in sufficient depth and are not oriented to assessing program effectiveness.
- Recommendation** Increase the scope of the QA audits and inspections to ensure that the effectiveness of the programs being audited is adequately assessed.
- Response** The recently established Quality Assurance and Reliability Department will be assigned responsibility for assessing some important aspects of station programs such as security, training, radiological

and environmental, operations, maintenance, safety, and fire protection. This will supplement the audit program presently conducted by site QA. Nuclear Generation will also perform assessments and reviews of some important station activities for the Executive Vice President-Nuclear Generation.

Finding
(OA.3-2)

The quality program does not include important balance-of-plant (BOP) equipment that could impact safety and reliability. BOP quality controls are presently limited to turbine/generator work and non-destructive examinations of secondary plant weld repairs.

Recommendation

Evaluate BOP equipment, and establish a list of components determined to be important from a safety or reliability standpoint. Establish appropriate controls for work quality, including selected inspections and tests, to ensure reliable operation of equipment following maintenance.

Response

The Authority will evaluate BOP equipment and components to select those that are determined to be important to safety and reliability. These will be included in the application of a modified (graduated) quality program. The modified program will be applied to selected important activities to an extent determined on a case basis by plant operations and QA personnel, consistent with available resources. This program will commence by July 1983.

OPERATIONS

OPERATIONS ORGANIZATION AND ADMINISTRATION

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

Finding
(OP.1-1)

The following Good Practice was noted: A shift supervisor is assigned to the Technical Services Department as a test coordinator during periods of extensive testing. The test coordinator functions as a liaison between the outage coordinator, the performance test group, and the maintenance and operations departments. Utilizing an operationally experienced supervisor to schedule, prepare for, and coordinate performance testing provides for efficient completion of required tests and significantly reduces the administrative burden of the shift supervisor.

CONDUCT OF OPERATIONS

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

Finding
(OP.2-1)

Non-licensed operator watchstanding practices need upgrading. Examples of areas where improvement is needed include logkeeping, proper manual operation of valves, and knowledge of and adherence to administrative procedures.

Recommendation

Expand current guidance on non-licensed operator responsibilities to include standards for watchstanding performance. Utilize supervisor involvement to place emphasis on deficient areas including those noted above. Consider including a review of selected administrative procedure requirements in periodic retraining.

Response

Guidance on non-licensed watchstanding performance will be expanded by August 1983 to include those areas noted as needing improvement. Selected procedures are being reviewed by watch sections in an ongoing program. These reviews include training sessions led by the shift supervisor for the non-licensed operators.

Finding (OP.2-2)	Non-licensed operators do not always report abnormal indications and material deficiencies to supervisory personnel. Some of these items remain uncorrected for extended periods of time.
Recommendation	Instruct non-licensed operators in the importance of investigating and reporting abnormal indications. Emphasize utilization of the work request system to identify material deficiencies.
Response	Non-licensed operators have been reinstructed in their duties and have received new training in the area of recognizing and reporting abnormal indications and material deficiencies. This training will be continued in an ongoing basis.

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)	Improvements are needed in the "Stop" and "Do Not Operate" tagging system. Deficiencies noted include the following: <ol style="list-style-type: none">Uncontrolled and unauthorized notes are sometimes used in situations where "Do Not Operate" tags are required by administrative procedures.Several "Do Not Operate" tags identifying material deficiencies have been in effect for extended periods of time.Some tags are insecurely attached to components, and many are incompletely filled out.A comprehensive, periodic audit of the status of tags and their associated operating orders is not conducted.
Recommendation	Eliminate the use of uncontrolled notes in lieu of authorized tags and re-emphasize the requirements of the existing tagging instruction. Revise the current procedure governing use of "Stop" and "Do Not Operate" tags to include a periodic audit of operating orders and the status of tags. This audit should include the following: <ol style="list-style-type: none">a review of the need for outstanding tags and operating ordersa check of the condition of posted tagsverification of proper attachment of tags and alignment of tagged equipment

- d. a check for unauthorized tags

Response The use of uncontrolled notes has been terminated. An audit program including the foregoing recommendations is being implemented and will be in effect by September 1983.

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) **Approved operating and alarm response procedures have not been developed for the water treatment plant.** An uncontrolled technical manual and an unapproved handout are being used for normal and emergency operation of the water treatment plant.

Recommendation Implement approved procedures governing normal and emergency operation of the water treatment plant.

Response Alarm response procedures, check-off lists, and operating procedures for the water treatment plant are being written. This task is about 60 percent complete and estimated to be completed by May 1983.

OPERATIONS FACILITIES AND EQUIPMENT

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

Finding
(OP.6-1) **Many plant valves are not identified with clearly distinguishable labels.** In addition to a number of unlabeled valves, numerous cases exist where several valves are assigned identical alpha-numeric labels.

Recommendation Continue the current valve labeling efforts and expand the program to include elimination of duplicate labeling.

Response The valve tagging program continues and is about 85 percent complete. Anticipated completion date is May 1983. The use of

duplicate numbers has been discontinued for all system modifications and for new systems installed in the last few years. Valves with duplicate numbers in original plant systems will be labeled with a noun descriptor. The noun descriptor will be used in conjunction with the valve number to establish unique identity. This task will be completed by September 1983.

Finding
(OP.6-2)

Housekeeping and equipment cleanliness in the secondary plant need improvement. Examples of areas needing improvement include the diesel rooms, 15-foot level of the turbine building, and the interiors of electrical switchboards and rod drive power supply cabinets.

Recommendation

Enforce plant housekeeping and post-maintenance cleanup policies. Place particular emphasis on secondary plant equipment and areas.

Response

Work clearance will not be accepted to restore equipment to service unless all aspects of the job are complete including cleanliness. Supervisory personnel have been instructed in this and also in the need for increased personal surveillance of the plant.

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 material condition of some plant areas indicates a need for increased attention to the identification and correction of deficiencies. Areas needing increased attention include the following:**

- a. the diesel generator building
- b. the turbine building
- c. the heater bay area
- d. the water treatment plant

Recommendation Increase management and supervisory involvement in upgrading the material condition of the plant. Re-emphasize the importance of correcting deficiencies in a timely manner.

Response Individual responsibilities dealing with the material condition of the plant have been stressed, and a program of increased aggressiveness toward completion of maintenance items is in progress.

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) **Increased efforts are needed to improve maintenance planning. Present practices result in delays while waiting for the decontamination of areas and preparation of radiation exposure authorizations (REA). Time is lost on return trips for parts or tools.**

Recommendation Emphasis should be placed on having all prerequisites completed before work is scheduled to start. Consider the following in efforts to improve maintenance planning:

- a. Establish decontamination and clean-up standards for preparation of work sites.
- b. Provide advance inspection of job sites where appropriate.

- c. Emphasize the need to carry needed tools and anticipated replacement parts to avoid unnecessary delays.
- d. Prearrange REAs to avoid delays in waiting for area radiological surveys and approvals.

Response

Improved job planning is constantly being emphasized in the Maintenance Department, including completion of job prerequisites before work is scheduled to start. The items noted above will be included in the improvement effort. To assist in this effort, various changes are being considered for inclusion in the general maintenance contract that will relieve some of the planning burden that currently rests completely with plant staff. These changes will be included in the new maintenance contract to be developed at the completion of the present outage.

**Finding
(MA.3-2)**

The work control system is not effectively used to reflect maintenance required in the plant. Plant deficiencies are often not in the system or, in some cases, have duplicate maintenance work requests. In some cases, it is difficult to determine whether an observed deficiency is in the system.

Recommendation

Emphasize the need to identify plant material deficiencies in the work control system and provide a method to reduce the duplication of maintenance work requests. INPO Good Practice MA-301, "Plant Material Deficiency Identification," could be of assistance.

Response

Aspects of INPO Good Practice MA-301 are being evaluated for inclusion in plant procedures to eliminate the weaknesses noted. Revised procedures will be implemented by September 1983.

CONDUCT OF MAINTENANCE

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

**Finding
(MA.4-1)**

Improvement is needed in maintenance practices for the control of parts removed during equipment disassembly. Removed parts are not always controlled or protected to prevent loss or damage.

Recommendation

Provide guidance to maintenance personnel on controlling and protecting disassembled equipment. Provide containers and protective coverings as necessary to improve control of removed parts and components.

Response

Instructions have been given to first- and second-line supervisors to ensure that disassembled parts and equipment are properly handled and stored in a manner that is consistent with good maintenance practices.

PREVENTIVE MAINTENANCE

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

**Finding
(MA.5-1)**

Some parts and materials in the warehouse are not stored and maintained in a manner that ensures quality. Examples include the following:

- a. Controls for limited shelf life items are not established.
- b. Preventive maintenance is not scheduled on motors and pumps.
- c. Desiccant reactivation or replacement controls are not established.

Recommendation

Conduct an evaluation of storage practices to ensure the quality of parts and material from the time of receipt until issued. Emphasis should be given to periodic servicing of stored equipment, control of shelf life, and environmental protection of stored items.

Response

An evaluation of storage practices will be conducted during the next operating cycle to address this finding, and appropriate corrective action will be implemented by June 1984.

MAINTENANCE PROCEDURES AND DOCUMENTATION

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

**Finding
(MA.6-1)**

Vendor manuals and drawings used by maintenance and instrument and control personnel are not controlled in a manner that ensures currentness and accuracy.

Recommendation Establish a system that ensures vendor manuals and drawings used in conducting maintenance are maintained current, are given appropriate technical review, and are certified adequate for the work to be performed.

Response Procedures will be developed to administratively control vendor manuals and drawings for changes issued by the vendor and also to ensure that they reflect modifications initiated by the Authority. It must be noted that in those cases where vendors provide manual revisions, they do not routinely provide change summaries; therefore, the system will only serve to ensure that changes that are received are entered. Station procedures affected by these changes will be updated accordingly. These administrative controls will be implemented by September 1983.

MAINTENANCE FACILITIES AND EQUIPMENT

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

Finding (MA.8-1) Improvement is needed in the control and accountability of welding electrodes. Existing procedural requirements are not consistently adhered to.

Recommendation Emphasize adherence to welding material control procedures. Ensure unused welding rod is properly accounted for after job completion.

Response Training on site procedures has been implemented. Supervisors have been alerted to the need to ensure that site procedures are followed.

Finding (MA.8-2) Not all portable lifting equipment is properly controlled and inspected to ensure safe load-lifting capability. A number of damaged wire slings were observed in the plant.

Recommendation Provide a program to control the storage and inspection of selected lifting equipment. Remove damaged slings from the plant and warehouse.

Response The Maintenance Department has purchased a number of new certified slings. An ongoing program will be developed to inspect

and monitor slings for damage. The initial inspection of lifting equipment will be completed by September 1983. Lifting equipment that is unsuitable for its intended service will be retired.

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)

Continued management efforts are needed to reduce the backlog of work in the Technical Services Department. Although a number of engineering and technical positions have been filled, several supervisory and professional positions remain vacant. Additionally, the backlog of engineering work has increased in the last year due to several extensive plant equipment problems.

Recommendation

Reduce the backlog of engineering work in the Technical Services Department through management actions such as the following:

- a. utilizing corporate Engineering Department resources wherever possible
- b. filling key supervisory and professional positions in the Technical Services Department

Response

The Power Authority agrees with the recommendations and has been endeavoring to implement them for well over a year. The work assigned to the corporate staff has been increased. Recruiting efforts will be intensified.

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 could not be determined at this time due to a lack of documentation of the review program.

A report on the status of each SOER recommendation issued to date is requested in the six-month follow-on response to this report. In addition, the status of each immediate action (red tab) SOER recommendation received subsequent to this evaluation should be included in the six-month follow-on response.

**Finding
(TS.3-1)**

The program for the review of industry operating experience needs improvement. The following deficiencies were noted:

- a. SOER/SER information is not distributed in a timely manner.
- b. Information on the disposition of SOER recommendations is not available.
- c. The status of pending actions on SOER recommendations is not tracked.
- d. Internal reviews of the operating experience review program to monitor its effectiveness are not performed.
- e. The program is fragmented with several departments having responsibilities over separate industry event reporting systems, with no mechanism to coordinate the efforts of these departments.

It is recognized that new procedures are being developed to improve the present program, but these procedures do not address all of the above concerns.

Recommendation

Upgrade and implement the new procedures to resolve the deficiencies noted above. INPO Document 82-003, "Significant Event Evaluation and Information Network," could be of assistance in this effort.

Response

Appropriate procedures reflecting INPO evaluation criteria will be developed and implementation will be initiated by August 1, 1983.

**Finding
(TS.3-2)**

The plant does not actively participate in the Nuclear Plant Reliability Data System (NPRDS). It is recognized that plans are currently in progress to re-establish failure data reporting.

Recommendation

Re-establish failure reporting to support the SEE-IN program and the sharing of equipment history information with other utilities. Review plant records and report past failures to NPRDS as appropriate. Review plant engineering data and update the data base to the new reportable scope guidelines.

Response

The Authority has committed to a program for direct reporting of NPRDS information as part of a pilot program being developed by INPO. Direct failure data reporting will be re-established by April 1, 1983. A schedule for implementation of past failure reporting and data base rescoping will be developed by July 1, 1983, and will be implemented by October 1, 1983.

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)**

Temporary modifications are often implemented without appropriate technical design review. The impact of system changes is not evaluated prior to installing jumpers and lifted leads. Also, a technical review of the loading effects of lead shielding is not performed prior to placement.

Recommendation

Perform a technical design review of temporary modifications (e.g., jumpers, lifted leads, and lead shielding on piping) currently installed on plant systems. Develop administrative controls to ensure that jumpers and lifted leads installed in the future receive an independent technical review prior to or promptly after placing affected systems in service. Conduct an engineering evaluation prior to placing temporary loads on piping and structures.

Response

A procedure revision will be implemented to provide a checklist for the individuals designated as responsible for jumper/lifted leads review in AP 13. This list will serve to ensure that these qualified individuals address appropriate design and engineering aspects of jumpers and lifted leads. This procedure revision will be accomplished by August 1983.

Temporary lead shielding will receive similar attention. Lead has not been placed indiscriminately at IP 3; nevertheless, a procedure similar to that for jumpers will be developed for placement of lead. This will be complete by August 1983.

Currently installed jumpers, lifted leads, and temporary lead shielding will receive similar evaluation.

In addition, a design review will be initiated to determine the feasibility of developing guidelines for the placement of temporary lead on plant structures.

**Finding
(TS.4-2)**

Procedures do not require updating of Drawings For Operations prior to placing modified systems into operation.

Recommendation

Establish controls to ensure that Drawings For Operations are updated prior to placing modified systems into operation.

Response Control procedures will be developed and implemented during the next operating cycle to ensure that Operations drawings are up to date before modified systems are placed into operation.

Finding (TS.4-3) The plant modification program needs to be improved to ensure that all changes to those plant systems identified in the as-built project are incorporated in associated drawings. Some changes to these systems have been made through the maintenance work request process and are not reflected on design drawings.

Recommendation Upgrade the modification program to ensure that all changes to those plant systems identified in the as-built project are incorporated into associated drawings.

Response An extensive procedure for the control of modifications has been implemented. This procedure includes steps that ensure that changes resulting from modifications are reflected in as-built drawings. The process of upgrading as-built drawings with previous modifications has been underway for several years.

REACTOR ENGINEERING

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

Finding (TS.5-1) Improvements are needed in the control of plant process computer programs. Formal controls have not been established for the review, approval, and documentation of changes to computer software.

Recommendation Establish formal control of changes to programs and other software in the plant process computer. Maintain a controlled listing of the current setpoints that are stored in the plant process computer.

Response A procedure will be established to control the listing of the setpoints and changes to programs in the new plant process computer when it becomes operational during the next operating cycle.

TECHNICAL SUPPORT PROCEDURES AND DOCUMENTATION

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

Finding
(TS.7-1)

Uncontrolled and out-of-date plant drawings are used throughout the plant, including the control room and the shift supervisor's office.

Recommendation

Replace outdated drawings in the control room and shift supervisor's office with current versions. Establish administrative controls to ensure that drawings used by plant personnel in the performance of their duties are kept current.

Response

A system of distributing limited sets of controlled drawings or drawings that undergo periodic review for currency will be initiated for operating and maintenance groups. The necessary procedures will be prepared for implementation by September 1983. Out-of-date drawings will be removed from operating areas of the plant.

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) Policies and procedures for the training of station personnel need improvement. Personnel do not always attend scheduled training. Staff personnel responsibilities for training are not clearly established. Short-term and long-term training goals are not established.

Recommendation Conduct an evaluation of the training program to determine training goals to be accomplished and the training organization necessary to meet those goals. Implement station policies and procedures to accomplish the established goals. Ensure that staff responsibilities are clearly delineated and that personnel receive scheduled training.

Response An evaluation of the training program will be performed by April 1983 to determine the training goals to be accomplished and the training organization necessary to meet these goals. Indian Point 3 Administrative and Indoctrination and Training Procedures will be revised as necessary to ensure these goals are accomplished. This evaluation will be performed by corporate and Indian Point 3 training personnel.

Finding (TQ.1-2) The classroom performance of station and contractor instructors needs to be upgraded. Areas needing improvement include control of students in classrooms, instructor preparation, and use of lesson plans. In addition, the classroom performance of instructors is not evaluated on a routine basis.

Recommendation Provide training to station instructors on instructional techniques. Develop and implement a program to evaluate contractor and station instructor classroom performance on a routine basis. A method to correct performance deficiencies should be included as part of this program.

Response A procedure is in the initial writing stage to evaluate contractor and station instructor classroom performance. This evaluation will be performed by both corporate and Indian Point 3 training personnel. The procedure should be implemented by June 1983.

**Finding
(TQ.1-3)**

On-the-job training programs for reactor operator trainees and for maintenance and instrumentation and control (I&C) technicians need to be established. It is recognized that some training is done by vendors on some specific equipment and in various skills areas. However, this training is neither coordinated nor comprehensive.

Recommendation

Develop on-the-job training programs for reactor operator trainees and maintenance and I&C technicians. The following elements should be included:

- a. tasks to be performed, observed, simulated, or discussed
- b. identification of individuals or classifications of individuals qualified and responsible for conducting on-the-job training
- c. skill and knowledge required to be performed, observed, simulated, or discussed for each identified task
- d. identification of individuals or classification of individuals qualified and responsible for conducting final checkouts
- e. assurance that an individual has demonstrated competency in specified tasks prior to job assignment

INPO Documents GPG-05, "Guidelines for Mechanical Maintenance Personnel Qualification," GPG-07, "Guidelines for Electrical Maintenance Personnel Qualification," GPG-08, "Guidelines for Instrument and Control Technician Qualification," and TQ-501, "Development and Implementation of On-The-Job Training Programs," could be of assistance.

Response

The on-the-job training portion of the licensed operator qualification/requalification procedures will be revised prior to May 1983, based on the intent of INPO TQ-501. The portion of the I&C training procedure relating to on-the-job training will be revised as soon as the vacant position of I&C instructor is filled. This procedure will be based on the intent of INPO GPG-08 and TQ-501. This position is expected to be filled in June 1983. An on-the-job training program procedure for maintenance personnel will be developed by September 1983. This procedure will be based on the intent of INPO GPG-05, GPG-07, and TQ-501.

NON-LICENSED OPERATOR TRAINING AND QUALIFICATION

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

**Finding
(TQ.2-1)**

Non-licensed operator initial and continuing training programs need to be improved. Areas that should be addressed include the following:

- a. basic technical subjects and applied sciences
- b. practical demonstrations of specific job duties
- c. plant systems and components
- d. procedures and operating practices

Recommendation

Modify the non-licensed operator initial and continuing training programs to encompass the areas identified above. INPO document GPG-04, "Nuclear Power Plant Non-Licensed Operators - Guidelines for Qualification Programs," and TQ-501, "Development and Implementation of On-The-Job Training Programs," could be of assistance in this area.

Response

The non-licensed operator initial and continuing training program procedure will be modified by May 1983. It will be based on the intent of INPO GPG-04 and TQ-501.

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 to improve job-related knowledge and skills has not been developed for maintenance and I&C personnel. Areas that need to be addressed include the following:

- a. specific equipment and specialized skills
- b. plant systems and components
- c. feedback from job performance

Recommendation Develop and implement a continuing training program for maintenance and I&C personnel. INPO documents GPG-05, "Guidelines for Mechanical Maintenance Personnel Qualification," GPG-07, "Guidelines for Electrical Maintenance Personnel Qualification," and GPG-08, "Guidelines for Instrument and Control Technician Qualification," could be of assistance in this area.

Response A continuing training program for I&C technicians will be developed as soon as the vacant I&C instructor position is filled. It is planned in 1983 to purchase a SAMS trainer to be used in this program. A procedure for a continuing training program will be implemented by October 1983. Appropriate INPO guidelines will be used to develop these procedures. A continuing training program for maintenance personnel will be developed by October 1983. This procedure will be based on the intent of INPO guidelines.

TRAINING FACILITIES AND EQUIPMENT

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

Finding (TQ.8-1) Training support materials used in class by students are often inaccurate or illegible. It is recognized that efforts are in progress to update the system descriptions and associated lesson plans.

Recommendation Develop and implement a method to keep student and staff reference materials up to date. In addition, ensure that the contractor-developed system descriptions currently being developed are delivered in a timely manner.

Response A method will be developed by July 1983 to maintain training materials up-to-date. The need for timely completion of system description updates is being emphasized to the contractor.

Finding (TQ.8-2) Classroom facilities do not provide an environment conducive to training. Problems noted include poor environmental controls, crowded and noisy classrooms, and inadequate audiovisual capabilities.

Recommendation Evaluate the adequacy of training facilities to support the training department. Develop a program to correct the deficiencies identified including those listed above.

Response

An evaluation of the training facilities will be performed by the corporate training staff by April 1983. Recommendations will be made to correct deficiencies noted. These recommendations will be provided in the six-month update report.

RADIOLOGICAL PROTECTION**RADIOLOGICAL PROTECTION ORGANIZATION AND ADMINISTRATION**

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

Finding
(RP.1-1)

The following Good Practice was noted: Oral qualification examinations are administered to radiological protection technicians to test their practical knowledge in dealing with unusual situations. These examinations require personnel to be able to recognize radiological problems, initiate corrective actions, and deal with unanticipated complications.

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)

Films used as training material in general employee training are not site-specific and are sometimes inaccurate. Examples of errors in the films include not inspecting protective clothing for adequacy and improper removal of protective clothing.

Recommendation

Proceed with the planned upgrade of the training films to ensure that general employee training accurately reflects plant radiological policies and practices.

Response

As part of the overall review and upgrade of the Radiological Protection Training Program, the radiation protection training films are being scripted and filmed to ensure consistency with site and industry practices. Completion of these films is expected by June 1983.

EXTERNAL RADIATION EXPOSURE

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

Finding
(RP.4-1)

The portable radiation survey instrument calibration program needs improvement. Specifically, the following problems were noted:

- a. The source and instrument detector geometry is not always accurate or reproducible because technicians have to estimate the instrument detector position with respect to the source position.
- b. Single point calibration is performed, which does not check instrument linearity.

Recommendation

Stabilize the alignment grid, and consider the use of jigs to permit accurate placement of instruments. Implement a program of performing dual point instrument calibration checks. ANSI N-323, "Radiation Protection Instrumentation Test and Calibration," should be used for guidance.

Response

To improve the accuracy of source and instrument detector geometry, positioning forms are currently being designed and will be implemented during the first quarter of 1983.

To enable checking of instrument linearity, procedure modifications for two-point calibration using ANSI N-323 guidance will be completed by September 1983.

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)

The program for reducing solid radioactive waste volume needs improvement. The following problems were noted:

- a. An aggressive program for preventing unnecessary material from entering the controlled area is not evident.
- b. Compacting equipment does not have an operating pressure gauge, and the relief valve setting is not known to radwaste personnel. Thus, drum density is not always maximized.

- c. Antispring-backs (drum discs) have not been considered for use in increasing drum density.

Recommendation Implement a program to minimize materials taken into the controlled area. This should be stressed in general employee training and emphasized to station personnel on a continuing basis. A method of segregating clean material in the controlled area should be considered.

Repair and modify the existing compacting equipment to obtain maximum drum density. The use of antispring-backs (drum discs) should also be evaluated.

Response Although the annual amount of solid radioactive waste generated at Indian Point 3 is comparatively low, a formal program will be initiated in 1983 directed toward solid radioactive waste reduction in general, which will include procedural implementation of informal methods currently utilized. Pressure gauges will be ordered for compacting equipment. Relief valve settings will be determined and adjusted if necessary. Use of antispring-backs will continue to be evaluated.

CHEMISTRY

CHEMISTRY CONTROL

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

Finding
(CY.3-1)

The following Good Practice was noted: Steam plant water purity is closely monitored by a comprehensive set of continuous analyzers. Key parameters such as sodium, cation conductivity, silica, dissolved oxygen, dissolved hydrogen, pH, chlorides, and hydrazine are displayed and recorded in the secondary laboratory and the primary sample room. Complete coverage of the steam plant is provided by separate sets of instruments for each condenser hotwell, the condensate pumps discharge, the feedwater (downstream of feedwater heaters), main steam, and each steam generator blowdown line. Chemistry personnel calibrate and maintain all of these continuous analyzers.

LABORATORY ACTIVITIES

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

Finding
(CY.4-1)

The analytical chemistry quality control program is incomplete in that it does not include controls over reagent/standard labeling and shelf lives, periodic analyses of spiked samples by technicians, and accuracy/precision checks on auto-pipettes.

Recommendation

Upgrade the analytical quality control program. Consideration should be given to the following items in this upgrade:

- a. method for labeling prepared reagents and standards
- b. specific guidance on acceptable shelf lives for prepared reagents and standards based upon their stability and risk of cross-contamination during use
- c. periodic analyses of spiked samples to check for significant variances in results between technicians
- d. routine checks on auto-pipettes to verify delivery volume accuracy and precision

Response

The Chemistry Department is in the process of improving the laboratory Quality Assurance Program. This upgrade has been in progress since August 1982, and the final implementation of this program is expected in August 1983. The program, as implemented, will address the INPO concerns.

APPENDIX I

Summary of Outstanding Response Action from Previous Evaluation (1981)

CONDUCT OF SHIFT OPERATIONS

(INPO Procedure OP-303, Revision 3)

2. **Finding**

Unique labeling or identification is needed for "out-of-tolerance" instrumentation. Instruments and annunciators that are in a degraded condition cannot be readily recognized by the operating personnel.

Recommendation

A program should be established to identify degraded instruments and annunciators in the control room and on local panels in the plant.

Response

A procedure will be developed and implemented by March 1982 to label or identify out-of-tolerance instruments.

Status

A considerable amount of time has been expended in the evaluation of different methods of identifying out-of-tolerance instrumentation. A formal procedure to identify these instruments is now in the final stage of development and should be implemented by March 1983.

OPERATIONS FACILITIES AND EQUIPMENT

(INPO Procedure OP-306, Revision 2)

Finding (Criterion C)

A recent test of the CO₂ fire extinguishing system determined that the control room atmosphere was degraded by the inleakage of CO₂ into the control room.

Recommendation

A detailed study should be made to determine inleakage of CO₂ gas. Appropriate corrective action should then be taken.

Response

Plans are under way to install an alarm in the control room that will monitor carbon dioxide levels. In addition, an attempt will be made to locate and repair the inleakage path for the CO₂ gas.

Status

Control room inleakage has been identified and repaired, and design of an oxygen deficiency monitor has been completed. Because of recent NRC requirements, use of an alternate gas monitoring system is being evaluated.

MAINTENANCE FACILITIES AND EQUIPMENT

(INPO Procedure MA-408, Revision 1)

1. **Finding (Criterion A)**

Improvements are needed in the size and arrangement of I&C work areas and shops.

Recommendation

It is recognized that management has plans for providing new facilities for the I&C Department. An effort should be made to complete this project in a timely manner.

Response

The I&C Department will be moving into new work areas and shops that are better suited to the performance of its work. These facilities are being built and should be completed by October 1982.

Status

Completion of these facilities has been delayed by the extension of the current outage. The currently estimated completion date of the new facilities is April 1983.

ENGINEERING SUPPORT

(INPO Procedure TS-702, Revision 2)

Finding (Criterion A)

A more comprehensive performance monitoring program is needed to ensure optimum plant thermal performance.

Recommendation

A more comprehensive program should be developed and implemented for plant performance monitoring with the objective of enhancing plant operating efficiency and reliability. The program should include data analysis of appropriate monitored variables and provisions for initiating corrective action.

Response

A performance monitoring program for plant thermal efficiency was implemented in the past and deferred because of known plant thermal deficiencies such as turbine baffling. The program will be revised and implemented, incorporating the above recommendation by April 1982.

Status

The development of a more comprehensive program for plant performance monitoring has been delayed until the completion of the present outage.

PLANT MODIFICATIONS

(INPO Procedure TS-704, Revision 2)

1. **Finding** (Criteria I)

Permanent plant drawings should be updated to an "as-built" status. It is recognized that a project is currently in progress to correct this condition.

Recommendation

Continue the current project of updating all drawings to an "as-built" status until completion.

Response

The current project will be pursued until it is completed.

Status

This is an ongoing project and includes a walk down of actual plant systems. All modifications through 1980 will be verified "as built" by January 1984.

TRAINING RESOURCES

(INPO Procedures TQ-205, Revision 0)

2. **Finding** (Criterion F)

The training facility library needs upgrading.

Recommendation

A library that is readily accessible to the training group should be established and maintained. This library should include controlled copies of plant drawings, training materials, and vendor manuals used in the training effort.

Response

Work is currently underway to enlarge the scope of the training library.

Status

A basic library has been established and additional training material is being purchased. It is anticipated that the library will be at a satisfactory level of operation by March 1983. Library improvement will remain a continuing program.

WASTE AND DISCHARGE CONTROL

(INPO Procedure RC-505, Revision 2)

2. **Finding** (Category II)

Radioactive waste storage facilities at the plant need improvement. Specifically, 55-gallon drums and metal boxes containing low specific activity radioactive waste were stored outside on the ground in the controlled area.

Recommendation

Management action should be taken to ensure that radioactive waste packaged for shipment is stored with proper environmental controls.

Response

PASNY concurs with the recommendation. Plans for an interim storage facility for radioactive wastes are under consideration.

Status

Capital funding for this project has been identified. Work will begin consistent with the site long-term improvement plan when the project is authorized by the trustees.

APPENDIX II

Performance Objectives Reviewed

ORGANIZATION AND ADMINISTRATION

OA.1 Station Organization and Administration

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

OA.2 Mission, Goals, and Objectives

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

OA.3.1 Management Assessment

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

OA.3.2 Quality Programs

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

OA.4 Personnel Planning and Qualification

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

OA.5 Industrial Safety

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

OA.6 Document Control

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

OA.7 On-site Nuclear Safety Review Committee

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

OPERATIONS

OP.1 Operations Organization and Administration

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

OP.2 Conduct of Operations

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

OP.3 Plant Status Controls

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

OP.4 Operations Knowledge and Performance

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

OP.5 Operations Procedures and Documentation

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

OP.6 Operations Facilities and Equipment

Operational facilities and equipment should effectively support plant operation.

MAINTENANCE

MA.1 Maintenance Organization and Administration

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

MA.2 Plant Material Condition

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

MA.3 Work Control System

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

MA.4 Conduct of Maintenance

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

MA.5 Preventive Maintenance

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

MA.6 Maintenance Procedures and Documentation

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

MA.7 Maintenance History

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

MA.8 Maintenance Facilities and Equipment

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

TECHNICAL SUPPORT**TS.1 Technical Support Organization and Administration**

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

TS.2 Surveillance Testing Program

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

TS.3 Operations Experience Review Program

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

TS.4 Plant Modifications

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

TS.5 Reactor Engineering

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

TS.6 Plant Efficiency and Reliability Monitoring

Performance monitoring activities should optimize plant thermal performance and reliability.

TS.7 Technical Support Procedures and Documentation

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

TRAINING AND QUALIFICATION**TQ.1 Training Organization and Administration**

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

TQ.2 Non-Licensed Operator Training and Qualification

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

TQ.3 Licensed Operator Training and Qualification

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

TQ.4 Shift Technical Advisor Training and Qualification

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

TQ.5 Maintenance Personnel Training and Qualification

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

TQ.6 Technical Training for Managers and Engineers

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

TQ.7 General Employee Training

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

TQ.8 Training Facilities and Equipment

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

RADIOLOGICAL PROTECTION**RP.1 Radiological Protection Organization and Administration**

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

RP.2 Radiological Protection Personnel Qualification

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

RP.3 General Employee Training In Radiological Protection

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

RP.4 External Radiation Exposure

External radiation exposure controls should minimize personnel radiation exposure.

RP.5 Internal Radiation Exposure

Internal radiation exposure controls should minimize internal exposures.

RP.6 Radioactive Effluents

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

RP.7 Solid Radioactive Waste

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

RP.8 Personnel Dosimetry

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

RP.9 Radioactive Contamination Control

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

CHEMISTRY

CY.1 Chemistry Organization and Administration

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

CY.2 Chemistry Personnel Qualification

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

CY.3 Chemistry Control

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

CY.4 Laboratory Activities

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

CY.5 Chemical and Laboratory Safety

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