

Evaluation
Report

October 1981

Indian Point
Station
Unit No. 2
Consolidated
Edison Company
of New York, Inc.

INPO

8112170109

EVALUATION
of
INDIAN POINT STATION
UNIT NO. 2

Consolidated Edison Company
of
New York, Inc.

October 1981

SUMMARY

INTRODUCTION

The Institute of Nuclear Power Operations (INPO) conducted its first evaluation of Indian Point Station Unit No. 2 during the weeks of February 9 and 16, 1981. This unit is owned and operated by Consolidated Edison Company of New York, Inc. (Con Edison). Indian Point Station Unit No. 1 was retired on December 31, 1980 and constitutes part of the same plant as Unit No. 2. Evaluation of Unit No. 1 was limited to activities and facilities shared with Unit No. 2.

Unit No. 2 is an 873 Mw Net Westinghouse pressurized water reactor. It is located on the Hudson River near Buchanan, New York, and has been in commercial operation since July of 1974. At the time of evaluation, Unit No. 2 was in the fifth month of a maintenance and refueling outage. During this outage, extensive modifications to certain plant systems were being performed.

PURPOSE AND SCOPE

INPO conducted an evaluation of site activities to make a determination of plant operating safety, to evaluate management systems and controls, and to make recommendations for areas needing improvement.

The evaluation was based on preliminary INPO criteria. Information was assembled from discussions, interviews, observations, and reviews of documents.

The evaluation team examined organization and administration, training, operations, maintenance, radiological and chemistry activities, and technical support. As a basis for evaluation INPO used its own experience on best practices within the industry and its draft written evaluation criteria. The evaluation standards were high, and the findings and recommendations are not limited to minimum safety concerns, but rather represent high standards for nuclear operations.

DETERMINATION

Within the scope of this evaluation, the team determined conditions were adequate to provide for safe operation of Indian Point 2 when it is restored to service. The following favorable practices and accomplishments were noted:

- o The corporate goal of safe plant operation is well established and understood at all supervisory levels.
- o Supervisory and operations personnel at all levels have a positive attitude.

- o Corporate goals are properly communicated to plant personnel, and appropriate personnel are held accountable for progress toward those goals.
- o There is an extensive training system, including an impressive initial operator training program.
- o The organization has many dedicated long-tenure employees.

Improvements were recommended in the following areas:

- o Controls, programs, and standards to upgrade maintenance practices and the material condition of plant equipment and facilities, particularly non-Class A systems, should be improved.
- o Practices for monitoring and controlling contamination of personnel and normally clean systems should be improved. In addition, measures to reduce external and internal radiological contamination levels of some plant systems should be implemented through a program to require minimizing waste in all plant operation and maintenance work .
- o Plant staff should improve the climate in which unexpected variations in the condition of plant systems and equipment during normal operation are evaluated, and in efforts to improve tracking of plant activities.

Responses to this evaluation are considered adequate. To follow the timely completion of the improvements included in the responses, INPO requests written notification of status six months from the date of this report.

Specific evaluation findings are in the accompanying DETAILS, and information of an administrative nature is in the ADMINISTRATIVE APPENDIX. Findings were presented at an exit meeting at the plant on February 20, 1981, and were further discussed along with Con Edison responses in meetings on April 22 and August 21, 1981.

The evaluation staff appreciates the excellent cooperation received from Con Edison.

E. P. Wilkinson
President

CON EDISON

Response Summary

Con Edison is pleased that during INPO's detailed evaluation of the management system, operation, maintenance, and other areas at Indian Point Unit 2, INPO found many favorable operating practices and accomplishments. We also appreciated the recommendations of INPO aimed at further enhancement of the safe and reliable operation of Indian Point Unit 2.

Since INPO conducted the evaluation, the site staff has been reorganized with four departments reporting directly to a corporate officer who is located at Indian Point. The four departments, Nuclear Power Generation, Technical Support, Environmental Health and Safety, and Administrative Services plus a Communications and Regulatory Affairs group give senior management at Indian Point a more effective span of control, and permit increased attention to efficient and safe operation of Indian Point Unit 2.

We appreciate the notation of "favorable practices and accomplishments" and agree with the improvements recommended in the Determination Section of the Summary. We offer the following responses to these three recommendations:

- o In order to upgrade the maintenance program at Indian Point, Con Edison engaged a management consultant to review the overall maintenance program. Based upon this review, significant improvements in the maintenance practices have been developed for both Class A and non-Class A systems. Implementation of these practices has begun and is scheduled to be completed by November 30, 1981.
- o Radiation protection practices have been reviewed and appropriate revisions have been made which will improve controls for personnel and equipment contamination. The program for the decontamination of plant systems has been expanded to further reduce contamination levels in these systems.
- o A Plant Perception training program has been developed for the station staff. This program emphasizes the importance of the prompt review and evaluation of unexpected variations in the condition of plant systems.

This response to INPO's Evaluation Report addresses each of INPO's Findings and Recommendations. Many of the actions resulting from INPO's recommendations have already been initiated and in some instances have already been completed. Con Edison will continue to implement improvements in the operation of our Indian Point facilities and will keep you informed through periodic reports.

DETAILS

This portion of the report includes the detailed findings. It is composed of six sections, one for each of the major evaluation areas. Each section begins with a summary describing the scope of evaluation, and is followed by findings, recommendations, and utility responses. Items which relate to criteria that have not been included in INPO procedures, but which are generally recognized as desirable and accepted techniques of industry and management, are referenced as "Category II." A listing of procedures used in this evaluation is in the ADMINISTRATIVE APPENDIX.

ON-SITE ORGANIZATION AND ADMINISTRATION

In this area the evaluation team examined plant organization structure, personnel qualifications, administrative controls, and programs for management objectives, quality assurance, industrial safety, and equipment surveillance.

OBJECTIVES

(INPO Procedure OA-101, Revision 2)

The team evaluated methods used to establish and promulgate management objectives, and to track progress so that timely completion of objectives is ensured. They also examined these objectives to determine if they provide substantive guidance to managers and supervisors, and to determine if they support the plant mission and corporate objectives. The degree to which objectives are used to guide daily activities was also evaluated.

Finding

An impressive and comprehensive list of 1981 goals and objectives encompassing corporate and station personnel has been distributed to all supervisory personnel. A means of monitoring the status and reporting regularly is in effect. All criteria in this procedure were met.

ORGANIZATION STRUCTURE

(INPO Procedure OA-102, Revision 2)

The evaluation team examined the plant organization to determine if it supports safe and efficient operation of the plant. Responsibilities, authorities, and accountabilities of staff positions were examined to see if they are clearly defined and well understood. Staffing levels were reviewed to determine if sufficient qualified personnel are available to preclude excessive overtime. Methods used to evaluate employee performance were also evaluated.

Finding

(Criterion B)

Written position descriptions based on job analyses are not available for every plant staff position. Position "guides" exist for all non-union positions and for operations and health physics technician positions; however, these are not the same as detailed position descriptions based on job task analyses which define authority, responsibility, and accountability.

Note: This finding also applies to INPO Procedure MA-401, Criterion C, and is not repeated in that section.

(Criterion C)

Performance evaluations are not conducted periodically for every individual on the plant staff. Only non-union personnel receive annual performance evaluations.

Recommendation

Provide position descriptions based on task analyses which define authority, responsibility, and accountability for each position on the plant staff.

Conduct periodic performance evaluations based on position descriptions for all individuals on the plant staff.

Response

A review of the Indian Point organization definition of position requirements and the development of new position descriptions was begun in 1980. Position guides for all management positions have been revised to reflect the new organization structure (effective March 27, 1981) and the results of job task analyses. In addition, an organization/responsibilities document has been prepared and distributed to management personnel, which provides further definition of authority, responsibility, and accountability. Development of position descriptions based on task analyses has been initiated for union positions. A clarification of job descriptions beyond that contained in the collective bargaining agreement requires negotiation and agreement between company and union representatives. Efforts will be made to complete this activity before the end of 1981.

The basis for performance evaluation for union personnel may be different than that for management personnel and will be considered following the development of position descriptions for union positions.

ADMINISTRATIVE CONTROLS

(INPO Procedure OA-103, Revision 2)

Station administrative procedures were examined to determine if clearly defined controls are in effect, and to determine if adherence to these controls is maintained.

Finding

(Criterion D)

Administrative controls have been disseminated; however, attention to procedure adherence is lacking in some areas. Examples were noted in industrial safety, jumper logs, personnel skin decontamination records, health physics survey equipment and frisker calibration stickers and trouble tags, non-licensed nuclear plant operator qualification procedures, and quality assurance self-auditing (QA-AD-20).

Recommendation

Provide instruction or training as appropriate to all personnel involved with activities which affect the plant to ensure that procedure adherence is attained.

Response

As part of an expanded training program, instruction and/or training as appropriate will continue to be done to ensure procedure adherence. This will be both in classroom form and on-the-job instruction. The revised organization also provides for increased staffing in the training section, especially for Nuclear Plant Operator training, in order to ensure that recommended training is accomplished.

QUALITY PROGRAMS

(INPO Procedure OA-104, Revision 4)

The quality assurance program was reviewed to determine if an approved program is in place to cover all aspects of plant operations; if the program is adequately staffed; and if organizational relationships ensure independence of the quality assurance staff from production responsibilities. Determination of program effectiveness was not within the scope of current evaluation criteria and was not evaluated.

Finding

(Criterion B)

An approved quality assurance program exists which covers Class A systems and some specific areas such as meteorology, fire protection, and radiological waste; however, most non-Class A functions are not covered in this program, but are treated in a separate program to a more limited degree.

Recommendation

Extend the quality assurance program coverage to all aspects of the operation. This should be done in a graduated manner by priority; that is, the degree of coverage should be in accordance with the relative importance of the system.

Response

In addition to the quality assurance program which is in place for Class A systems and other specific areas noted above, for the past several years Con Edison has incorporated portions of its quality assurance program for all procurement actions selected by Engineering and for all purchases valued in excess of \$200,000. Primary elements of this program included vendor evaluation, incoming material inspection, and performance testing after installation.

The plan is to further expand the QA program to incorporate balance of plant, including non-Class A systems at Indian Point, in 1982 and 1983. This program will include review of plant equipment in operation, as well as the development of detailed specifications, vendor evaluations, material inspection programs, and post-installation testing on a pilot basis before implementation for the entire facility.

INDUSTRIAL SAFETY

(INPO Procedure OA-106, Revision 3)

The evaluation team examined the industrial safety program to determine if management is actively committed to industrial safety, if the program is supported at all levels of the station staff, and if the program is effective in minimizing safety hazards and accidents.

Finding

(Criterion B)

While Indian Point 2 has an enviable safety record of over 2 million man-hours without a lost-time accident, management attention to certain areas of industrial safety could be improved. Extensive maintenance and repair work was being performed at the station by other than station personnel, and the majority of problem areas involved this group.

Recommendation

Enforce Consolidated Edison's safety regulations and require supervisors to support the enforcement policy. Adherence to company regulations should be required of all employees working at the station, including contractor and Power Generation Maintenance personnel.

Response

A program of controls has been established to ensure that all personnel employed at Indian Point Station comply with Consolidated Edison's safety regulations. Policy direction has been given by the Vice President, Nuclear Power, to accomplish this. Reinforcement and feedback are being accomplished by a revised training program for all personnel, examination following training/retraining, and periodic inspections by outside organizations of compliance with safety regulations. Prompt correction of any deficiencies will be directed from the Vice President, Nuclear Power, and monitored by the Communications and Regulatory Affairs Group.

SURVEILLANCE PROGRAM

(INPO Procedure OA-107, Revision 3)

The surveillance program was examined to determine if adequate procedures and associated acceptance criteria are in use. The team also evaluated methods used for surveillance test scheduling, for control of operations so that safety is not adversely affected during testing, and for identification and resolution of deficiencies identified during testing.

Finding

All criteria in this procedure were met.

PERSONNEL QUALIFICATIONS

(INPO Procedure OA-108, Revision 2)

The team evaluated methods used for establishing qualification requirements for each job position, and for ensuring that positions are filled with qualified personnel.

Finding

All criteria in this procedure were met.

TRAINING

In this area, the team evaluated training organization, the administration of training programs, training resources, and training effectiveness. Training programs for the following job classifications were also evaluated: licensed operators, non-licensed operators, shift technical advisors, mechanical maintenance personnel, instrument and control technicians, health physics technicians, and emergency plan team members.

Consolidated Edison has an extensive training system for Indian Point Station nuclear plant operators and reactor operators which provides comprehensive verification of qualifications prior to assumption of job duties. The training programs effectively utilize a control room simulator to enhance operator proficiency.

The Nuclear Training Subsection has a well-established administrative control system for developing and implementing station training programs. The station training staff is composed of experienced personnel who are aggressively pursuing improvements in the site training programs. Although most criteria against which the training organization was evaluated were met, there are conditions where opportunity for improvement exists.

TRAINING ORGANIZATION AND ADMINISTRATION (INPO Procedure TQ-211, Revision 2)

The team examined the site training organization and the administrative guidance used by the organization to develop, implement, and evaluate training activities and programs used for the qualification of plant personnel.

1. Finding

(Criterion B)

The training organization is not of sufficient size to perform all projected 1981 training assignments without overtime. Implementation of some training-related projects has been rescheduled because of this problem. Additional impact is noted in that the average overtime for instructors for the past year has been about twenty percent and several instructors have not completed an instructional skills development program. This condition detracts from overall effectiveness of the training subsection.

It is noted that this situation has been recognized by plant management, and the Nuclear Training Director has submitted an organizational development plan outlining staffing needs.

Recommendation

The organizational development plan for the training staff should be reviewed and staff members should be added as needed.

Response

A review of the training organization was started in 1980. As a result of this review, the training organization staff has been increased to address most of the training disciplines. It is projected by Con Edison that with the staff increase, overtime will be reduced and instructional participation in training skill development workshops will proceed.

2. Finding

(Criterion D)

Formal retraining is not being provided to maintain and improve instrument and control (I&C) and maintenance personnel technical proficiency. The current retraining system involves only informal review of equipment and procedure changes and periodic vendor programs covering specific equipment. Positive controls for the scope of technical information dissemination are lacking.

Recommendation

The retraining activities for instrument and control and maintenance personnel should be established in a written, management-approved procedure. The program should identify practices to be used in enhancing personnel proficiency in current job duties. The program should include coverage of procedure and equipment changes, maintenance practices, and selected plant systems and equipment information related to their job duties.

Response

The five year training program formulated in 1980 will define and address the scope of retraining, the retraining span, and application methods for I&C and Maintenance personnel. This program is scheduled to begin in September 1981. Additional training staff and a new training facility have been acquired and are being prepared for this program.

TRAINING RESOURCES

(INPO Procedure TQ-221, Revision 2)

The evaluation team examined training facilities, equipment, and materials available to support the delivery of on-site training programs for plant personnel.

Finding

All criteria in this procedure were met.

TRAINING EFFECTIVENESS

(INPO Procedure TQ-231, Revision 2)

The team examined plant management and training organization practices relating to evaluation of training program effectiveness, auditing of training activities, and evaluation of instructor and trainee performance in training programs.

Finding

All criteria in this procedure were met.

NON-LICENSED OPERATOR TRAINING
(INPO Procedure TQ-242, Revision 2)

The team examined the training programs and practices used for initial qualification of non-licensed operator candidates, and for maintenance and improvement of qualifications of existing non-licensed operators.

Finding

(Criterion D)

During the refueling/maintenance outage, formal retraining was not being provided to the non-licensed nuclear plant operators. The only ongoing training activity was on-shift study and review of procedures and plant changes. A revised training program had been written for future implementation, and was under review at the time of the evaluation.

Recommendation

A revised training program for non-licensed operators should be implemented. The program should include coverage of changes to plant systems, operating procedures, and administrative controls which affect the non-licensed operator's duties. Appropriate industry operating experiences should also be integrated into the program. A periodic assessment of non-licensed operator job knowledge and skills should be included to evaluate current job proficiency and retraining directed toward correction of identified deficiencies.

Response

The Nuclear Plant Operator (NPO) retraining program that developmental work began on in 1980 was started in July 1981. The program includes both reviewing past training, and reviewing changes that have been made to plant systems, operating procedures, and administrative controls.

LICENSED OPERATOR TRAINING
(INPO Procedure TQ-243, Revision 2)

The team evaluated the training program and practices used for initial qualification of licensed operator candidates.

Finding

All criteria in this procedure were met.

LICENSED OPERATOR REQUALIFICATION PROGRAM
(INPO Procedure TQ-244, Revision 2)

The team evaluated the requalification program and training practices used to maintain and improve the qualifications of licensed personnel.

Finding

All criteria in this procedure were met.

SHIFT TECHNICAL ADVISOR TRAINING
(INPO Procedure TQ-245, Revision 1)

The team evaluated the qualification program and training practices used to initially qualify shift technical advisor candidates, and to maintain and improve the qualifications of the shift technical advisors.

Finding

All criteria in this procedure were met.

OPERATIONS

Operations activities were evaluated in areas of conduct of shift operations, tagout practices, organization and administration, procedures, plant status controls, facilities and equipment, and shift turnover. It should be noted that observations during the course of this evaluation were limited to shutdown and refueling activities.

OPERATIONS ORGANIZATION AND ADMINISTRATION

(INPO Procedure OP-301, Revision 3)

The evaluation team examined the Operations Subsection organization and administration to determine if there is a well-defined and well-understood organizational structure, if department management has adequate authority to accomplish assigned tasks, if operating personnel are provided adequate administrative support, if all instructions are issued in an effective manner, and if position descriptions are available and used for all personnel.

Finding

(Criterion D)

Senior Watch Supervisors (SWS) are responsible for administrative activities which could be delegated to non-operations personnel. INPO recognizes that effort has already been made to relieve the Senior Watch Supervisor of various administrative functions to facilitate concentration on shift operations; however, further effort should be made in this area.

Recommendation

Evaluate Senior Watch Supervisor administrative and clerical responsibilities to identify those which could be delegated to persons not tasked with supervising the shift. Reassign tasks as necessary.

Response

Efforts to reduce the administrative activities of the Senior Watch Supervisor started in 1980. All routine security matters are now handled by the Con Edison Security Shift Supervisor. The filling out of routine MWRs is performed by other personnel, i.e., NPOs, Security Supervisors, and authorized Section Heads. Efforts are under way to computerize the MWR system and relieve the SWS of his MWR tracking responsibilities. This effort will be completed by November 30, 1981.

Evaluation of Senior Watch Supervisor administrative and clerical responsibility is continuing and, as identified, duties are being shifted to staff personnel.

TAGOUT PRACTICES

(INPO Procedure OP-302, Revision 2)

In this area the team examined tagout procedures to verify that they are understood and followed by plant staff, that Senior Reactor Operator approval is required and obtained for removal of safety-related equipment from service, that double verification is required for safety-related manual valves which do not have control room indicators, that the use of tag coloring and numbering is clear, and that the clearance log is periodically reviewed.

1. Finding

(Criterion E)

Stop tags are authorized and posted by operations watch personnel. Persons responsible for performing the work are not required by procedure to verify the tagout status. It is left to the discretion of the individual worker whether or not to make a verification prior to performing work on a tagged system.

Recommendation

Establish a policy which requires tagging status verification for work on tagged out equipment before beginning work. Verification should be by persons authorizing or performing the work.

Response

The company has had in place an established policy which requires tagging status verification for work on tagged out equipment before beginning work. However, SAO-105, Work Permits, is currently under review, which will include consideration of INPO recommendations. Changes will be implemented to allow for the joint review and inspection of protection, where feasible and beneficial, by those who will perform the work. Any such changes will be made prior to November 30, 1981.

2. Finding

(Criterion F)

Stop tags on control room consoles obscure labels, valve position indications, and switch positions. Such obstruction reduces the ability of plant operators to monitor plant systems and performance.

Recommendation

Review placement and physical characteristics of tags with emphasis on improvements to avoid obscuring switch labels, indications, etc.

Response

A review for placement of tags to avoid obscuring switches, labels, indications, etc., was performed in 1979 and 1980 and resulted in current practices such as crimping and placing tags between switches. Plant management has decided that these practices could be improved further, and therefore newly designed smaller tags have been ordered which more suitably fit the switches in the Central Control Room.

3. Finding

(Criterion G)

Audits by the operations group of the status of tagouts are neither required nor conducted. Some tagouts have existed without audit for

lengthy periods. Even though no specific problem with tagouts was observed because of this condition, tagout status is subject to degradation such as loss or damage of tags.

Recommendation

Develop and implement a policy to perform periodic reviews of the tagout system that establishes suitable checks and balances.

Response

The Quality Assurance Audit Program currently in effect provides for periodic reviews of work permits and tagouts. An additional operational audit program is currently under development which will require specific audits of tagout status on a periodic basis. This program will require the field checks of tag status, and will be in force by November 30, 1981.

CONDUCT OF SHIFT OPERATIONS
(INPO Procedure OP-303, Revision 3)

The team examined the conduct of shift operations to verify that operator activities are related to plant operation, that control room and plant operations are orderly and efficient, that log keeping is timely and accurate, and that instrumentation is reliable and operators have confidence in their indications.

Finding

(Criterion A)

Operator assets are being diverted to non-operational activities in that Conventional Plant Operators are required to rig and maintain temporary cold weather protection in the circulating water pump dock area. Operators spend time in this area because of the existing equipment protection system.

Recommendation

Review and evaluate activities of the Conventional Plant Operators to determine whether they are consistent with expected duties. Eliminate support functions which detract from expected watchstanding activities. Similarly, evaluate activities of all auxiliary type operators and eliminate unnecessary support functions.

Response

Plant management concurs with the INPO recommendations and is currently reviewing plant operator duties to identify and evaluate any support functions which could detract from their watch-standing activities. Those duties are being delegated to support personnel where appropriate.

Regarding the specific issue of cold weather protection on the dock, the necessary improvements (insulation, heating, etc.) are being made and will be completed by the fall of 1981.

USE OF PROCEDURES
(INPO Procedure OP-304, Revision 2)

The team evaluated various types of procedures to determine if management policies exist for their use, if procedures are being used adequately and are clear and concise, if emergency procedures are conducive to quick and appropriate response by the operators, and if a system for revising and controlling procedures is in effect.

1. Finding

(Criterion D)

Several emergency procedures contain actions beyond those needed for immediate control of an emergency; existing immediate actions are lengthy in some instances, with some subsequent actions grouped within immediate actions. Examples of these conditions are in procedures E-2 and E-17. This increases the possibility that operator effectiveness will be hampered in recalling necessary immediate action steps. It is understood that action is under way to alleviate this condition.

Recommendation

Continue with current revision program for emergency procedures. Formally train operators as revisions are completed.

Response

The company committed in early 1980 to review and revise as necessary the plant emergency procedures as a result of human factors considerations. The human factors rewrite of the Unit #2 Emergency Procedures has now been completed. The procedure review reduced the number of immediate actions, and the procedures were rewritten in a format more suitable from a human factors standpoint. Retraining of operators when procedure changes are made is routinely performed and will be accomplished for these changes as well.

2. Finding

(Criterion E)

Currently a system is not in effect to ensure that temporary procedure changes are kept up to date. In some cases temporary procedure changes have been in effect for an extended period of time without being incorporated as permanent changes or being cancelled.

Recommendation

Assign primary responsibility for followup of temporary procedure changes after an appropriate time period to evaluate for incorporation as permanent changes, or for cancellation.

Response

There are currently no temporary procedure changes which have been in effect for more than a few months. Operations Administrative Directives control the temporary procedure change system. These directives are being amended to provide clarification of the temporary procedure change policy. Forms have been modified to facilitate more positive tracking and closeout of temporary procedure changes in a timely fashion.

PLANT STATUS CONTROLS
(INPO Procedure OP-305, Revision 2)

In this area the team evaluated plant status controls to verify that management-approved policies exist for these controls, that equipment operability is effectively controlled, that a senior licensed individual is assigned responsibility for plant status controls, that special situations such as outages and post-accident recovery are provided for, and that management frequently monitors and evaluates plant status to ensure safe and reliable conditions exist.

Finding

(Criterion B)

Status boards are used to indicate current equipment status at watch stations during power operations; however, status boards are not designed for or used for outage conditions.

Recommendation

Expand the existing procedure for use of status boards during outage conditions.

Response

Status boards are under review for development of additional information formats for shutdown and refueling. This project is scheduled for completion by November 30, 1981. Shutdown status boards will be provided for the next refueling outage if warranted by the results of this review.

OPERATIONS FACILITIES AND EQUIPMENT
(INPO Procedure OP-306, Revision 2)

The evaluation team examined operations facilities and equipment to verify that equipment is accessible, that programs are in effect to maximize equipment availability, that work environments contribute to efficiency and safety of plant operations, that communication equipment is adequate, and that watch stations are adequate.

Finding

All criteria of OP-306, Revision 2 were met.

SHIFT TURNOVER
(INPO Procedure OP-307, Revision 1)

The team examined shift turnover to determine if procedures specify turnover requirements for all operating shift positions; if turnovers include mechanisms to communicate pertinent information on equipment status, operations, or testing in progress; and if pertinent logs are reviewed.

Finding

(Criterion B)

Nuclear Plant Operators and Conventional Plant Operators do not use watch turnover check sheets or other means to guide the turnover process.

Recommendation

Develop and implement turnover checksheets for Nuclear Plant Operators and Conventional Plant Operators. In addition, evaluate the need for modification of the existing control room turnover checksheet to include information pertinent to shutdown conditions.

Response

Turnover checksheets have been developed for the Conventional Plant Operators and Nuclear Plant Operators. These checksheets were placed in effect in June 1981. Review of the checksheets for shutdown information will be completed by November 30, 1981.

MAINTENANCE

In this area the team evaluated maintenance organization, preventive maintenance programs, procedures, work control systems, maintenance history, control and calibration of test equipment and instrumentation, and maintenance facilities and equipment.

Consolidated Edison Maintenance and I&C organizations at Indian Point were found to have many programs in place that to some extent address concerns of the performance criteria. The findings reported for this evaluation area generally lead to recommendations for upgrading existing programs and for more direct supervisory attention toward implementation of programs. There are several areas noted where improved attention to the quality of work on non-Class A (non-safety related) systems is recommended. The need to upgrade the material condition of certain secondary plant systems was identified as a special concern.

MAINTENANCE ORGANIZATION AND ADMINISTRATION (INPO Procedure MA-401, Revision 3)

The maintenance group was evaluated to determine if it is organized to accomplish maintenance tasks. Areas of interest included position descriptions, assignment of responsibilities and authorities, administrative controls, safety and communications programs, and administrative workload.

A favorable feature of this area is the long length of service and experience level of the majority of employees in maintenance and instrument and control sub-sections.

Determinations for the area of maintenance organization and administration are as follows:

1. Finding

(Criterion A)

The responsibilities and the span of control for one of the I&C supervisors is extensive and detracts from efficient work performance.

Recommendation

The I&C organizational structure should be reviewed and action taken as necessary to equalize the administrative and supervisory tasks assigned to I&C supervisors.

Response

In 1980 Con Edison initiated an extensive review of the management organization at Indian Point. One aspect of that review was to analyze the responsibilities and span of control of all supervisors. Based on that review and INPO's recommendation, modifications have now been made to reduce the scope of responsibilities of I&C supervisors to enhance the performance of the I&C section. A key element of that change is the establishment of a computer group within the I&C Section responsible for hardware and software on microprocessors and computer systems.

2. Finding

(Criterion B)

Neither the maintenance nor the I&C sections are staffed to perform all assigned responsibilities expeditiously. Administrative and work backlogs exist in several areas.

Recommendation

The ongoing management review of maintenance and I&C work practices should determine manpower needs. Based on the review, staffing levels should be adjusted as required so that administrative and work backlogs can be resolved and maintenance support activities can be adequately performed.

Response

A reorganization of the Maintenance section to increase efficiency and reduce overtime was started in 1980. A management consultant has been contracted to introduce methods for scheduling and preplanning maintenance activities. New staff positions have been added which will lessen the administrative workload on the present maintenance staff.

The I&C management organization is being expanded to incorporate pre-work review, better scheduling techniques, and development for improvement in work habits.

The training program for I&C supervisors and technicians is being expanded.

PREVENTIVE MAINTENANCE

(INPO Procedure MA-402, Revision 2)

A review was made to determine if preventive maintenance (PM) activities are being performed, and if a well defined and effective program is in effect. Administrative procedures governing the program, and the organization responsible for program implementation were also examined. Areas of interest included criteria used to define what equipment is covered by the program, the use of equipment history files in conjunction with the program, the adequacy of PM procedures for safety related equipment, and frequency of PM inspections.

Good features of the program were the computerized status printout of the PM schedule and the lubrication schedule.

Determinations for the area of Preventive Maintenance are as follows:

1. Finding

(Criterion A)

No comprehensive procedure or guideline is provided to describe and define the objectives, scope, adjustment features, and administrative controls for the Maintenance Department or I&C preventive maintenance program. Maintenance Administrative Directive M-AD-4, Rev. 1, "Procedure for Performing Maintenance," sections 2.2 and 6.2 provide

general statements regarding the purpose of PM procedures. There are no specifics which address subjects such as PM computer file format, status reports, coordination responsibility, reviews, and adjustment features. I&C Department procedure IC-AD-7, Rev. 5, "Periodic Instrument Calibration," also does not meet the intent of this criterion in that it does not adequately address the scope and adjustment features of the PM program.

The need to upgrade the PM program has been recognized by maintenance supervision. A review is already underway.

(Criterion C)

Detailed guidelines or criteria are not readily available for maintenance or I&C which define which plant instruments and equipment are to be included in the PM program.

(Criterion G)

The type of maintenance department PM activities and the PM frequencies are not prescribed for all equipment. As a result, the maintenance engineer or maintenance general supervisor must research equipment history and determine the desired PM each time work is done.

Recommendation

Continue development of a comprehensive program description and administrative control procedure for the preventive maintenance program.

Establish specific criteria for items to be included in the PM program. The equipment categories described in this performance criterion are suggested as a guide. Existing PM lists should be reviewed against the new plant criteria and items added or deleted as appropriate.

Maintenance supervision should continue present efforts to upgrade the PM activity descriptions. Descriptions of desired preventive maintenance inspection scope and repair or replacement should be established for all items receiving PM.

Response

For I&C, a special task force was established in October 1980 to upgrade the PM program and the frequency of calibration for all station instrumentation. All instrumentation inside containment was calibrated/checked/tested as appropriate prior to returning the unit to service in April 1981.

The same task force is supporting the maintenance section in the development of a comprehensive maintenance program on critical operating equipment.

By November 30, 1981, administrative procedures for the Maintenance Section will be revised to provide a more detailed method for formal implementation of a revised preventive maintenance program on Class-A and secondary plant equipment. These administrative directives will also provide for establishing frequencies and review cycles.

As indicated in the response to Finding 2 below, Con Edison is reviewing its PM procedures. As part of that review, more detailed criteria than presently exist for items to be included in the PM program will be developed. After the more detailed criteria are prepared, existing PM lists will be reviewed for additions and deletions as appropriate.

As part of the continuing review of the PM activities, the existing descriptions of the PM requirements will be reviewed and upgraded as appropriate by December 31, 1981.

2. Finding

(Criterion B)

The condition of certain plant equipment should be improved as indicated by leaks and corrosion. Some plant instruments were observed to be damaged. Pump seal leakage, valve leakage, and oil leaks were observed.

Recommendation

Consolidated Edison should conduct a review of the overall preventive maintenance program effectiveness. As examples of some corrective actions that should be taken, maintenance and I&C management should perform a detailed survey of secondary and primary plant equipment. A work action punchlist should be established to identify all items requiring repair or replacement. For the long term, maintenance and I&C supervisors should establish a system to monitor the condition of plant equipment.

Response

Con Edison is currently developing a complete PM program for all equipment at the site which will result in improved record keeping, among other things.

The main focus of the preventive maintenance program has been on Class-A equipment; however, secondary plant equipment should receive the same attention. This effort was started in late 1980. By November 30, 1981, additional maintenance administrative procedures will be written to provide a method for formal implementation of a revised preventive maintenance program on both Class-A and secondary plant equipment. These procedures will also allow for establishing frequencies and review cycles.

MAINTENANCE PROCEDURES

(INPO Procedure MA-403, Revision 3)

The team performed an evaluation to determine the adequacy of maintenance procedures and vendor manuals for safety-related and key balance-of-plant work activities. Procedures and manuals were examined to determine the types of activities covered, scope, level of detail, review and approval cycle, document control requirements, and methods of revision.

A good program to upgrade the format of maintenance procedures was noted.

Finding**(Criterion A)**

Specific procedures are generally not provided for instrument/controls and maintenance work on all non-Class A equipment. Examples include feedwater pumps, condensate pumps, and heater drain tank pumps. Vendor manuals are sometimes referenced for maintenance work; however, the manuals used are not approved as procedures, nor are they controlled documents.

(Criterion B)

No comprehensive criteria are formally established to define requirements for development and revision of corrective and preventive maintenance procedures. Maintenance Department procedure M-AD-26/QA-AD-28, Rev 0, calls for maintenance procedures to be developed when required for step by step delineation of complex operations of a continuous nature and for Class-A or fire protection modification packages. This administrative directive addresses only Class-A work and does not cover work that involves personnel safety or which affects plant reliability.

Recommendation

Corrective maintenance and preventive maintenance procedures should be developed for work on critical non-Class A equipment. Reference to vendor instruction manuals should address controlled manuals that have been subjected to an approvals review similar to plant procedures.

Criteria established to govern development of Indian Point maintenance procedures should be expanded to call for procedures to be developed for non-Class A work that involves regulatory requirements and complex work requirements. Additionally, the criteria should call for written procedures for work on equipment that impacts plant reliability or personnel safety if malfunctions occur.

Response

An administrative program for preventive and corrective maintenance procedures does exist for Class-A equipment. The company recognizes INPO's confirmation that Con Edison has developed a good program to upgrade the format of maintenance procedures and recognizes the need for adherence to these procedures on critical non-Class-A equipment. Accordingly, procedural format for critical non-Class-A equipment will be established and operational by November 30, 1981.

Con Edison had initiated a program to review the types of maintenance and repair activities for which written procedures are required. The scope of maintenance activities for which procedures are required is being expanded.

WORK CONTROL SYSTEM

(INPO Procedure MA-404, Revision 2)

The team examined administrative mechanisms used for identifying and reporting equipment problems. Evaluation was performed to determine if the work control system was effective for planning and for documenting the completion of maintenance work. Specific areas of interest included the administrative procedure for requesting corrective maintenance, and those provisions in the system related to planning, authorizing, and documenting work.

A favorable feature of this area is the computerized program that gives a status list of the maintenance work requests (MWR).

Determinations for the area of Work Control Systems are as follows:

1. Finding

(Criterion F)

Administrative controls governing reviews of MWRs do not specifically require identification of non-destructive examination (NDE) requirements or identify work that may affect equipment design. No guidelines are given for requirements for action when modifications are identified. In practice, these reviews are being performed on an informal basis.

(Criterion I)

Non-Class A MWRs do not consistently give specific information regarding parts used, data taken, procedures affected by changes, drawings affected, and other details useful in a summary of maintenance action.

Recommendation

Procedures governing the use of MWRs should be revised to reflect current practices for identification of potential design modifications and NDE requirements. The responsibility for performing the reviews should be identified. The MWR form should be revised as necessary to show that the quality review for NDE requirements was performed. A checkoff to show that a QC review has been performed would be appropriate provided that the governing MWR procedure clearly calls for NDE requirements to be part of this review.

Maintenance and I&C management should review the existing practices and policies regarding documentation of maintenance work and revise them as necessary to provide more specific information on work records. Particular attention should be directed toward upgrading documentation of non-Class A work.

Response

Con Edison has been evaluating the format and content of the MWR. Modifications to the MWR form are being coordinated with revisions to other standard forms which presently provide for QC review, as appropriate. The review and revisions to the MWR and other standard forms used in the maintenance section are scheduled for completion by November 30, 1981.

Con Edison is reviewing the standard forms used in the maintenance section. As part of this review, the scope of the documentation of maintenance activities will be reviewed prior to September 30, 1981 and modified as needed.

2. Finding

(Criterion H)

Comprehensive controls are not established to govern work performed on non-Class A instrument systems to ensure that I&C work does not exceed the scope described in the approved MWR. Non-Class A work may exceed the MWR scope at the discretion of the work supervisor.

Recommendation

Administrative procedures governing conduct of maintenance should be revised as necessary to show a specific requirement to subject expanded MWR work activities to a review process equivalent to that provided for the original MWR. This requirement should apply both to Class A and non-Class A work.

Response

As part of the current review of the maintenance program, Con Edison is reviewing the requirements for pre-implementation review of maintenance activities and will revise the maintenance administrative directives as appropriate prior to November 30, 1981.

MAINTENANCE HISTORY

(INPO Procedure MA-405, Revision 3)

The team reviewed maintenance history records to determine if they were complete and functional, and if they were being used for evaluating equipment performance. Evaluation areas included the amount and type of equipment included in the program; level of detail, traceability, and retrievability of records; methods used in reviewing and evaluating maintenance history; and assignment of responsibility for implementing the program.

The assignment of a full-time maintenance staff member to manage the records is a good feature.

Determinations for the area of maintenance history are as follows:

Finding

(Criterion A)

No comprehensive guidelines or procedures are available which describe the methods and responsibilities for implementing the I&C department maintenance history programs.

(Criterion C)

Maintenance history work packages are not easily traceable for certain equipment items. Files are not organized to facilitate retrieval of all records. A good cross-index capability is not in effect.

Recommendation

A formal administrative procedure or guideline should be developed to describe the I&C maintenance history program. This procedure should be sufficiently comprehensive to describe history record format, responsibilities, access, and methods to evaluate and trend equipment performance.

Maintenance Department machinery history for 1979 and 1980 outages should be incorporated into the regular maintenance history system files. Alternatively, maintenance history index cards should be updated to specify the outage file location of MWR packages not in the system files. The maintenance history procedure, M-AD-24, Rev 0, should be revised as needed to describe the file system and practices currently in place.

Response

Con Edison does use maintenance history records to evaluate equipment performance; however, the need for formalizing the system is recognized. Con Edison has a more formal administrative program under development. It is scheduled to be implemented by November 30, 1981.

To facilitate retrieval of records for review of outage jobs by the Nuclear Regulatory Commission, Con Edison maintained a separate maintenance machinery history for work conducted during outages. These files would be incorporated in the regular machinery history system files at the end of the outage. With the implementation of the new file system for the maintenance section, a separate file system for outage-related work will be unnecessary.

**CONTROL AND CALIBRATION OF TEST EQUIPMENT
AND INSTRUMENTATION**

(INPO Procedure MA-406, Revision 2)

In this area a review was made to determine the adequacy and effectiveness of methods used for calibration and control of test equipment and instrumentation. Areas examined included methods used for identifying, calibrating, storing, issuing, transporting, and using measuring and test equipment (M&TE). Procedures establishing and governing the calibration programs and existing calibration records were also reviewed.

The most favorable feature in this area for I&C personnel is the added assurance that the instrument technician must verify that the device is not out of calibration when he logs it out from the M&TE storeroom.

Determinations for the area of control and calibration of Test Equipment and Instrumentation are as follows:

1. Finding

(Criterion D)

Neither the maintenance nor the instrument and calibration organizations mark out-of-calibration equipment with tags showing date of rejection, reason for rejection, and the name of the individual rejecting the device.

Recommendation

Administrative controls and work practices should be revised as necessary to implement use of unique tags for defective and out-of-calibration measuring and test equipment.

Response

Con Edison views that the program could beneficially be revised by following the INPO recommendations. Such revisions are planned to be implemented by November 30, 1981.

2. Finding

(Criterion E)

Storage of some out-of-calibration measuring and test equipment is mixed with calibrated items. It was noted that Maintenance Department storage of calibrated tools was in transition to new cabinets; however, the problems identified were for items in the new storage locations.

Recommendation

Administrative controls and storage practices in the Maintenance Department should be revised as needed to provide for segregated storage of defective and accepted measuring and test equipment.

Response

A review of the administrative controls and storage practices in the Maintenance Section, including a review of the need for segregated storage, has been underway. Additional storage facilities will be available upon completion of the new administrative/technical support complex. Work on this complex began in June 1981.

3. Finding

(Criterion F)

Controls are lacking for issuing calibration devices to off-site support groups, and for contaminated devices being held by the health physics organization. Logs used for these purposes are incomplete, and a number of controlled devices are being lost.

Recommendation

Any off-site organizations using controlled Indian Point Measuring and Test Equipment should implement equivalent controls for storage and issuance of these items as done by the plant organization. Consolidated Edison should review tool control practices on an overall basis to provide more positive controls over unauthorized use. Contaminated tools held by the Health Physics organization should have positive controls for storage and issuance.

Response

Methods for the control of calibrated equipment on loan to off-site support groups or in the Health Physics Hold area are being re-evaluated by the Maintenance Section. Additional administrative controls will be

established to implement the recommendations contained in the evaluation. These new procedures will be in effect by November 30, 1981.

MAINTENANCE FACILITIES AND EQUIPMENT
(INPO Procedure MA-408, Revision 2)

The evaluation team examined maintenance facilities and equipment to determine adequacy and condition. The location, size, and condition of office, work, and storage space were examined, along with the number, type, condition, and location of maintenance tools and equipment.

A favorable feature of this area is the computerization of the purchase requisition system and the adjustment of the inventory of items in stock.

Determinations for the area of Maintenance Facilities and Equipment are as follows:

1. Finding

(Criterion A)

Work areas provided for I&C technicians in the administration building shop and the HP Instrument Repair Shop do not contribute to efficient performance of work. The I&C shop in the administration building was observed to be overcrowded with instrument parts storage. The HP instrument shop was found to have limited space for the number of workers normally assigned to the area, considering the scope of their activities.

Recommendation

Management should conduct a review of the instrument shop facilities and take action to relieve the crowded conditions of the administration building shop and the HP instrument repair shop. A separate area for decontamination of instruments should be established that is segregated from the normal work area.

Response

A review has been underway and additional facilities are planned as part of the new administration/technical support complex. Work on this complex began in June 1981.

2. Finding

(Criterion D)

The storage of materials at the Service Center is not appropriate to maintain the quality of these items. The capability to readily obtain parts and materials and the time required to obtain materials from the warehouse do not assure efficient operation. Materials storage at the Service Center was observed to be overcrowded. A significant number of materials were found to be stored in aisles. Class A materials were stored with non-Class A items.

Recommendation

Consolidated Edison should conduct a review of plant storage needs and upgrade the storage capacity as needed to provide sufficient storage of warehouse items. The review should examine the capability of the plant staff to access warehouse items and develop improved retrievability. If the plant continues to maintain the existing temporary storage cribs, action should be taken to provide appropriate storage practices for these areas, including segregation of Class A materials from non-Class A materials and proper inventory controls.

Response

A review was started in 1980 and will be completed in 1981. Immediate action has been taken to assure adequate segregation of Class A and non-Class A material.

RADIATION PROTECTION AND CHEMISTRY

Organization, administration, facilities, and equipment were examined in light of current INPO criteria. The content of certain technical programs was also evaluated. Those programs were ALARA, dosimetry, contamination surveillance and control, radioactive waste, survey equipment control and calibration, and chemistry.

RADIATION PROTECTION AND CHEMISTRY ORGANIZATION AND ADMINISTRATION

(INPO Procedure RC-501, Revision 1)

Manpower, organizational structure, authority, and training were evaluated to determine if they are supportive of good health physics and chemistry programs. Procedures by which these programs are administered were also reviewed to determine if they provide sufficient guidance to assure continuity in the conduct of day-to-day operations.

The Chemistry and Radiation Safety Department was found to be well organized and functioning smoothly. Many positions are filled by experienced and capable personnel, and observation indicated that they are well respected and have adequate authority.

Finding

All criteria in this procedure were met.

ALARA PROGRAM

(INPO Procedure RC-502, Revision 1)

This area was evaluated to determine if the company is making a substantive effort to maintain exposures as low as reasonably achievable (ALARA). Those aspects of an ALARA program specifically addressed were issuance of a high level policy statement, assignment of responsibility for implementation, comprehensiveness, and mechanisms for setting goals and measuring the success of the program.

There were a number of good ALARA practices observed during the evaluation. Examples of such practices were the use of mockups, portable shielding, engineering design improvements, daily review of high exposure jobs, and a widespread awareness of the ALARA program.

Finding

There were some areas for improvement in the ALARA program; however, these areas will be addressed under more specific procedures such as contamination and radiation control.

PERSONNEL DOSIMETRY

(INPO Procedure RC-503, Revision 2)

Personnel dosimetry practices were evaluated to determine if exposures are being accurately determined, and if records and reports of individual exposures are complete and available to those individuals needing the information.

The dosimetry program was found to be effective for monitoring personnel exposures. The plant has a computerized record system for maintaining exposures, logging in and out of controlled areas, and for tracking radiation work permits. This system appears to be a very useful tool in the ALARA program as well as the dosimetry program.

Finding

All criteria in this procedure were met.

RADIATION SURVEILLANCE AND CONTROL

(INPO Procedure RC-504, Revision 2)

The evaluation team examined practices used to ensure that workers remain fully informed of radiological conditions in work areas, and evaluated the policies for control of contamination to determine if they are consistent with good ALARA practice.

The plant has an adequate program for conducting routine surveys and Radiation Work Permit surveys. Radiation warning signs were observed to be current and to contain sufficient information. In spite of the adequate surveillance program, controls over radiation and contamination levels could be improved.

1. Finding

(Criterion C)

Reduction of High Radiation and Contamination Levels

The radiation and contamination control program does not provide for maximum accessibility with minimum protective requirements to all parts of the plant. Although inside the controlled area, we noted that many areas in the Primary Auxiliary Building (PAB) have high radiation and contamination levels, some of which have existed for several years. Examples of such areas are the CVCS Holdup Tank rooms and the Waste Holdup Tank rooms. These tanks read from a few hundred mr/hr up to 10 R/hr on contact, and contamination levels in the rooms exceed one million DPM/100cm² in some places.

Recommendation

It is recognized that the company has initiated substantial efforts to reduce the levels of radiation and contamination in the plant.

The company should continue with the current cleanup program to remove surface contamination, and where possible, to flush tanks in order to remove sediment which is causing high radiation fields. This should be combined with an aggressive program to identify and repair leaks and cleanup contamination following such repairs.

Response

The company concurs with the observations made under criterion C, noting however, that those areas which have remained at high radiation and contamination levels for several years are not heavily trafficked and are subjected to continuing conditions that may cause contamination and high radiation levels. The company has undertaken a program for routine cleanup, and a major plant betterment program is in progress which should substantially reduce both contamination and radiation levels.

2. Finding

(Category II)

Radioactive Contamination of Personnel and Control of Contamination

Under the general criterion that personnel skin contamination should be monitored and efforts made to determine and remove the cause for increases in the number of such cases, it was found that many cases of skin contamination have been recorded for the current outage. Many of the incidents were related to improper techniques for removing contaminated respirators and protective clothing.

A number of examples were noted where workers were not rigorously complying with procedures and generally accepted good practices regarding contamination control. The practices observed can result in the spread of contamination to clean areas and in personnel contamination.

Recommendations

The number of contamination cases and the cause for such cases should be monitored on a continual basis. Causes should be eliminated through a combination of procedure revision, better training, and posted instructions, where feasible, to remind workers of the proper techniques for activities such as frisking, removing clothing and respirators, and step off pad use.

Plant managers and supervisors should improve enforcement of contamination control procedures.

Response

Posters delineating proper techniques in clothing and respirator removal have been made and appropriately placed throughout the plant.

The company agrees with the category II general criterion that personnel skin contamination should be monitored and efforts made to determine and remove the cause for increases in the number of such cases.

Con Edison has emphasized in its radiation safety training and retraining program proper procedures for removal of protective clothing. Management will continue to review records and adjust plans to determine a possible cause and effect relationship, and take appropriate action.

WASTE AND DISCHARGE CONTROL
(INPO Procedure RC-505, Revision 2)

This area was evaluated to determine if there is a system of controls that will minimize the generation of radioactive waste, reduce the likelihood of having an inadvertent release, detect the presence of contamination in systems where it should not be, and ensure that all activities related to this area are effectively coordinated between different departments involved in radioactive waste handling.

1. Finding

(Criterion A)

Adequacy of Effluent Monitoring

Procedures and procedural adherence for controlling the release of liquid and gaseous discharges should be improved. Examples of omissions of certain information were found on the permits that were reviewed.

A number of examples were found where the high background in the area of an effluent monitor affected monitor sensitivity and response.

Recommendation

The effluent program, including both gases and liquid, should be reviewed to determine the scope of the problems in this area. This should be followed up by emphasizing procedural adherence and the need for a thorough review of each release permit. In addition the liquid effluent radiation monitor should be decontaminated to reduce the background, and a calibration performed on the monitor to determine its response characteristics. The setpoint should be checked periodically, and there should be a periodic functional check performed to ensure that the effluent valve will actually close when the monitor setpoint is exceeded.

It is recognized that a plant committee has been established to review the needs for improvement in the radiation monitoring system.

Response

To effect improvements a formal audit program has been undertaken to include monitor response and permit adherence. This program will also consist of a comprehensive check-off list which will be forwarded to the General Manager, Nuclear Power Generation, and Chief Operations Engineer. In addition, an extensive operator training program is scheduled, as part of the expanded training program, to encompass all aspects of effluent releases. The committee formed to look into this area is addressing the subject of monitor background, calibration, set points, and functional checks. Recommendations of the committee are forwarded to the General Managers for appropriate action.

2. Finding

(Criterion D)

Identification of Radioactivity in Normally Non-radioactive Systems

It was found that a program does not exist for routine sampling of all systems which have a potential for becoming contaminated. Several systems which are normally clean have been contaminated by leakage through check valves in the isolation valve seal water system (IVSWS).

(Category II)

Monitoring for Radioactive Discharges from Normally Clean Systems

The general criterion that there be a comprehensive monitoring program for all potentially significant effluent paths was not met in a few locations. Portions of the Service Water System were reading from a few mr/hr to as high as 70 mr/hr from internal contamination. The only source of monitoring for the Service Water System is the monthly flow proportional sample being taken from the discharge canal.

The auxiliary boilers, being contaminated, offer another potential pathway. Although steam from the auxiliary boilers is relatively clean, a tube leak into the fire box could result in a discharge through the auxiliary boiler stack.

Recommendation

Identification of Radioactivity in Normally Non-radioactive Systems

The plant should thoroughly sample the clean systems such as service air to ensure that contamination, if present, is confined to portions of the piping system which would not present a personnel hazard. Other actions such as flushing and institution of administrative controls should also be considered if contamination is found.

Following this, the plant should identify those systems which have the potential to become contaminated and initiate a routine program for sampling these systems. Consideration should be given to the potential for undesirable pressure drops, leaking valves (especially check valves) and inadvertent valve lineups when establishing the sampling program. Sampling locations should be selected to provide early indications of system contamination.

Monitoring for Radioactive Discharges from Normally Clean Systems

The company should determine the nature and source of the contamination. These sources of contamination should either be monitored or a basis for not monitoring should be documented.

There should be an evaluation of the monitoring needs for systems such as the Auxiliary Boilers and the Service Water System.

The company should identify all discharge paths such as pipes, stacks, storm drains, etc., and evaluate the potential for unplanned releases via these pathways. Periodic samples or surveys should be taken as appropriate to detect any abnormal contamination levels.

Response

Identification of Radioactivity in Normally Non-radioactive Systems

Several normally clean systems are routinely sampled to determine possible contamination, such as house service boilers and condensate storage tanks of Units 1 and 2. The company concurs that an improved program is desirable for routine sampling of normally clean systems which have a potential for becoming contaminated. Immediately subsequent to INPO's evaluation such a revised program was implemented to routinely sample all clean systems, not normally monitored, with a potential for becoming contaminated.

Monitoring for Radioactive Discharges from Normally Clean Systems

The company has conducted a program to identify potential unmonitored release paths and provide for monitoring, or justify the lack of monitoring. Periodic re-reviews of this area are conducted.

3. Finding

(Category II)

Reduction of Radioactive Waste

Under the general criterion that there should be overall management of the radwaste program with emphasis on reducing the volume of solid, liquid and gaseous radwaste, including effluents, it was found that the volumes of solid radwaste and liquid effluents generated on a long term basis are large. An average of over 3500 ft³/month of solid waste was generated during the 13 months ending January 1981 of which approximately 1600ft³/month was evaporator bottoms. Liquid effluents for 1980 total approximately 4 million gallons which included approximately 2 million gallons from Indian Point 3.

It was found that leaks exist in the waste gas system, particularly the compressors. It was also found that design pressure cannot be achieved in the Waste Gas Tanks. These tanks are frequently released at 75 psig even though SOP 5.2.1 states that the normal pressure is 110 psig.

Recommendation

It is recognized that the company has contracted with an outside organization to identify ways to reduce solid and liquid wastes. In addition, an engineer within the company has been assigned on a part-time basis to review the plant's operations and report to the General Manager, Environmental Health and Safety on ways to reduce the waste. The company should consider appointing a full-time radioactive waste manager to coordinate the efforts in this area. There is a broad range of activities concerning radioactive waste such as liquid and steam leak reduction, equipment evaluation and replacement, waste system inventory monitoring, scheduling processing, arranging shipments, and evaluating the source of solid waste (contaminated trash). These activities (the list is not comprehensive) can be more effectively controlled if they receive overall management attention rather than being fragmented among the various plant subsections.

Response

In the area of solid and liquid radwaste, the company's existing program is to conform with the general criterion of overall management of the radwaste program, with emphasis on reducing the volume of solid radwaste which includes reducing the volume of liquid radwaste that must be solidified. As INPO has recognized, Phase I of a study on the radwaste operation has been performed. The company intends to perform a complete evaluation in this area and provide the management attention required. Toward this end, the radwaste operation has been reorganized, with overall management specifically assigned. With respect to the waste gas system, problems associated with the waste gas compressors, such as potential leak paths, are known and are being addressed by the company's Engineering Departments. The goal is to achieve a 25% reduction in liquid and solid waste in 1982 and an additional 10% in 1983.

RADIOLOGICAL SURVEY EQUIPMENT CONTROL AND CALIBRATION
(INPO Procedure RC-506, Revision 2)

This area was evaluated to determine if the program in use will ensure that survey instruments provide accurate measurements, that instruments are available and in good condition when needed, and that instruments found to be out of calibration are not used in a manner that causes any significant exposure. The program was generally effective but one area was identified where improvements should be made.

Finding

(Category II)

Calibration Procedures

A general criterion that calibrations include a check near both ends of a scale (linear) and that the checks should be within 10% of the known values of these points is not being met. Plant procedures generally require only a single point check on each scale and the typical acceptance criteria is stated as $\pm 10\%$ of the full scale value and not the true value.

Recommendation

ANSI Standard N323-1978 should be used as a guide to upgrade the calibration practices.

Response

The company concurs with the recommendation but maintains that change in linearity is not a common recalibration problem. Calibration procedures have been changed to implement this standard where practicable.

PROCESS WATER CONTROLS

(INPO Procedure RC-508, Revision 2)

This area was evaluated to determine if the plant staff has established a chemistry control program based on the needs of their particular plant and whether or not they are adhering to the program. The team also evaluated how well the staff is staying abreast of the latest knowledge regarding corrosion mechanisms and how best to prevent corrosion.

The team noted that there is a comprehensive program for trending chemistry data and a great deal of emphasis on controlling air in-leakage to the secondary system. Both of these are noteworthy activities.

Finding

All criteria in this procedure were met.

HEALTH PHYSICS FACILITIES AND EQUIPMENT

(INPO Procedure RC-509, Revision 2)

This area was evaluated to determine if there are adequate quantities of instruments, equipment, and supplies to support health physics and chemistry activities. Work stations were also evaluated to determine if they are safe, if they promote efficiency, and whether or not instruments which are normally used there are environmentally protected.

There are adequate numbers of instruments and protective equipment to support plant operations. Office facilities and laboratories are generally adequate; however, there was one finding in this area.

Finding

(Criterion C)

The Adequacy of Counting Rooms

The design and working environment of the chemistry counting rooms need improvement. The counting rooms are small, crowded with equipment, including old storage cabinets and instruments, the ventilation system does not provide adequate cooling, and the accumulation of dirt on the instrument electronics was stated to be a problem.

Recommendation

It is recognized that the company has some plans to renovate the two rooms currently being used as counting rooms. Consideration should be given to moving the counting room operations into a larger area. In addition to allowing a larger buffer zone around sensitive equipment, a larger facility would provide the capability to handle an increasing number of activities in this area when the plant has to implement Standard Radiological Technical Specifications.

Response

This area has been redesigned and alterations are scheduled to be completed by the end of 1981.

TECHNICAL SUPPORT

In this area of the evaluation, the team examined on-site and corporate office engineering support of plant operation and the design change program. In addition to engineering, the team also reviewed drawing control practices and programs in effect to evaluate significant operating experiences at Indian Point and other nuclear stations. The team concluded that the station is receiving adequate technical support. Document control, modification of non-Class A systems, jumper log procedures, and operating experience review methods were noted as areas where improvements could be made.

ENGINEERING SUPPORT

(INPO Procedure TS-702, Revision 1)

The team evaluated on-site engineering support through examination of engineering support organization, interface with off-site support, programs for monitoring plant performance and investigating operating problems, and programs for evaluation of the effectiveness of engineering activities. Document control practices were also reviewed.

It was noted that the station is being supported by a strong engineering organization and that excellent communications are being maintained between Nuclear Power Generation personnel and the field engineering group on site. Determinations were made as follows:

Finding

(Category II)

Copies of the Station's Technical Specifications are not controlled in order to ensure that up-to-date documents are used to verify compliance with the operating license. Management has taken steps to ensure that changes are entered promptly in the control room copy; however, the distribution of revisions to other copies is not controlled.

(Category II)

The drawing control system does not effectively ensure that only up-to-date drawings are used for plant operation and installing modifications. After a modification has been completed, drawings could be inaccurate for several months before an as-built revision is issued and put in the file. Drawings in the control room file are not marked in any way during this period to indicate that they no longer show as-built conditions or that they are affected by a modification in progress or recently completed.

This problem has been recognized by the utility, and an on-line computer system is being developed by General Engineering to provide drawing status information to users.

Recommendation

A formal program should be implemented to ensure that copies of the Technical Specifications are controlled and that all amendments are properly entered.

The following items should be considered with respect to the drawing control system.

- a. The set of drawings filed in the control room should be controlled.
- b. When a drawing in the control room file does not reflect the actual plant condition it should be stamped or otherwise annotated to alert potential users to this fact.
- c. An index should be maintained which provides the status of drawing revisions. Additional information, such as identification of modifications in progress, should be noted on the index as necessary when the "As-Constructed" revision is outdated.
- d. Station management should review the need to extend drawing controls such as those described above to other sets of drawings in the station, for example, drawings used routinely for reference by I&C and maintenance personnel should be considered.

Response

Con Edison emphasizes that it has always had a formal method for the distribution of approved changes to the Technical Specifications, and that the effectiveness of this system has been demonstrated by the fact that throughout countless audits the company has never been cited for having obsolete editions in critical locations.

To improve the reliability in this particular area, a system for more positive control of the Technical Specifications was instituted in May 1981.

An index of drawings, which Control Room personnel consider important and most useful, is maintained by the Quality Assurance Department to ensure that the operators are apprised of the latest revisions. The up-to-date drawings are filed in the Central Files which are easily accessible to the operators. The system will be expanded to incorporate items a, b, and c above. In addition, Con Edison will review its present control system to determine if additional documents, such as those noted in item d, should be incorporated.

NUCLEAR OPERATING EXPERIENCE EVALUATION PROGRAM (INPO Procedure TS-703, Revision 1)

The effectiveness of evaluation and followup of operating experiences was examined by the team. Station administrative order, SAO-120, Revision 0, addresses this area. It was noted that generally thorough reviews and complete records are maintained of Significant Operating Experience Reports (SOERs) provided by INPO and the Nuclear Safety Analysis Center (NSAC). Determinations were made as follows:

1. Finding

(Criterion A)

The existing program defined in SAO-120, Rev. O, "Nuclear Plant Safety Information Handling System," is not complete. The program does not require the review of industry Significant Event Reports (SERs) which are distributed via the NOTEPAD system.

(Criteria G. 2 and G. 4)

The disposition of all operating experience information received is not documented. Administrative order 120 requires that only safety information judged to be pertinent and passed on to plant staff need be logged. As a consequence of this a subsequent independent review to verify that pertinent information is properly classified is not possible.

Recommendation

The existing administrative order should be revised to include the review and evaluation of SERs. The addition of SERs into the order should replace the existing reference to "standards of excellence" which is not specific.

SAO-120 should be revised to include logging of all incoming operating experience information. In addition, the order should include a statement that the log will periodically be independently reviewed to ensure proper classification of all material.

Response

One of the functions of the newly organized Technical Support Department at Indian Point will be to evaluate Significant Event Reports (SERs).

Station Administrative Order SAO-120 has been revised to reflect the review of SERs. The Communications and Regulatory Affairs group distributes all SERs and maintains a follow-up system which ensures that the SERs are reviewed.

SAO-120 has been revised to include recording of the disposition of all operating experience information. Revision 1 of this administrative order dated March 27, 1981 includes a requirement that Quality Assurance periodically evaluate this Safety Information Handling System.

2. Finding

(Criterion F. 2)

The program does not include provisions to promptly notify other utilities concerning significant events with generic implications. Administrative orders address the requirements for reporting events to the NRC, but not to other utilities.

Recommendation

Existing station policy regarding dissemination of information regarding significant in-house events should be reviewed. This review should then become the basis for revising station orders to include guidance for placing information into the NOTEPAD system.

Response

A formal procedure for inputting information into NOTEPAD has been established as part of the new instructions issued by the Communications and Regulatory Affairs Group.

PLANT MODIFICATIONS

(INPO Procedure TS-704, Revision 1)

The evaluation examined methods and programs for plant modifications to determine if they are implemented in a safe and timely manner and maintain the quality of plant system and components. Determinations were made as follows:

1. Finding

(Criterion A)

Instrument setpoint changes including those which affect control room alarms are controlled by calibration procedures. Similar control does not exist for changes to the setpoints of non-Class A instruments.

Recommendation

Procedures should be established to control changes to the setpoints of non-Class A instruments. Instrument setpoint changes should receive a safety evaluation.

Response

Any such changes that are to be permanent will be reflected in the appropriate procedures and training documents such as System Descriptions.

A task force was established in October 1980 to expand existing maintenance, calibration, and surveillance programs for all instruments in the station. This program will also function as a mechanism for establishing and controlling setpoints. Implementation of this revised program began early in February 1981.

2. Finding

(Criterion C)

Modification status is not being tracked for Class A and non-Class A system changes from request through approval, implementation, document revision, and training completion.

Class A modifications are identified at various stages of design and implementation by a variety of numbering systems (e.g. ESR no., Project no., Modification Procedure no., MWR). None of these systems, however, enables station management to effectively track modification status through all stages.

Recommendation

A system for tracking the status of all plant modifications should be developed and implemented.

Response

Tracking of status of plant modifications for a given activity is the responsibility of the group in the company responsible for the activity.

One of the functions of the Technical Support group will be to track all plant modifications. This tracking system will provide the correlation between identifying numbers used at various stages and by different company organizations.

3. Finding

(Criterion F)

Not all design changes undergo formal technical interdisciplinary review and approval in that long term jumper installations, which constitute changes in system design, are not subject to such control. Temporary modifications can in effect be made to plant systems through use of the station jumper log procedure, SAO-126. Instrumentation in the control room is tagged to indicate the status of equipment, but the tags do not specifically indicate the presence of a jumper in the circuit.

Recommendation

It was recommended that station management continue their efforts to reduce the number of jumpers presently installed in plant systems. In order to provide increased control over the use of jumpers in the future, consideration should be given to the following:

- a. Independent technical review of proposed jumpers, in addition to the review by operations personnel, should be required. This review could include a safety evaluation or a statement explaining the basis for not requiring such an evaluation.
- b. An individual who is not assigned to the operating shift could be designated to periodically review the log. He could ensure that jumpers which are no longer needed are removed and the number of active jumpers is kept to a minimum.

Response

- a. Independent technical review will be established.
- b. One of the functions of the on-shift STA is to periodically review the jumper log to ensure the removal of jumpers which are no longer needed.

4. Finding

(Criterion I)

The modification program does not address a requirement to ensure that revisions are made to affected procedures and training is accomplished before modified systems are placed in service. The necessary changes and training requirements for modifications being implemented during the present outage are being identified but this action is not formally required by the modification program.

Recommendation

It was recommended that the modification program be revised to incorporate the requirements for procedure revisions and training. Completion of these activities should be noted in the system for tracking modification status (see Criterion C discussion).

Response

A mechanism for ensuring that procedural changes and training are accomplished, prior to use of a modified system, is in place at Indian Point. This system will be formalized, including tracking of the system, as noted in the response to the findings under Criterion C.

ADMINISTRATIVE APPENDIX

I. LISTING OF AREAS EVALUATED

ON-SITE ORGANIZATION AND ADMINISTRATION

- OA-101 Objectives
- OA-102 Organization Structure
- OA-103 Administrative Controls
- OA-104 Quality Programs
- OA-106 Industrial Safety
- OA-107 Surveillance Program
- OA-108 Personnel Qualifications

TRAINING

- TQ-211 Training Organization And Management
- TQ-221 Training Resources
- TQ-231 Training Effectiveness
- TQ-242 Non-Licensed Operator Training
- TQ-243 Licensed Operator Training
- TQ-244 Licensed Operator Requalification Training
- TQ-245 Shift Technical Advisor Training

OPERATIONS

- OP-301 Conduct of Shift Operations
- OP-302 Tagout Practices
- OP-303 Operations Organization and Administration
- OP-304 Use of Procedures
- OP-305 Plant Status Controls
- OP-306 Operations Facilities and Equipment
- OP-307 Shift Turnover

MAINTENANCE

- MA-401 Maintenance Organization and Administration
- MA-402 Preventive Maintenance
- MA-403 Maintenance Procedures
- MA-404 Work Control System
- MA-405 Maintenance History
- MA-406 Control and Calibration of Test Equipment and Instrumentation
- MA-408 Maintenance Facilities and Equipment

RADIATION AND CHEMISTRY

- RC-501 Radiation Protection and Chemistry Organization and Administration
- RC-502 ALARA Program
- RC-503 Personnel Dosimetry
- RC-504 Radiation Surveillance and Control
- RC-505 Waste and Discharge Control (Liquid)
- RC-506 Radiological Survey Equipment Control and Calibration
- RC-508 Process Water Controls
- RC-509 Health Physics Facilities and Equipment
- RC-511 Respiratory Protection Program

TECHNICAL SUPPORT

- TS-702 Engineering Support
- TS-703 Nuclear Operating Experience Evaluation Program
- TS-704 Plant Modifications

II. CON EDISON PERSONNEL CONTACTED

President and Chief Operating Officer
Senior Vice Presidents
Vice Presidents
Assistant Vice President
Manager, Nuclear Power Generation
Plant Manager
Quality Assurance Engineer
Personnel Supervisor (Acting)
Nuclear Training Director
Technical Engineering Director
Chief Operations Engineer
Test and Performance Engineer
Instrument and Controls Engineer
Maintenance Engineers
Chemistry and Radiation Safety Director
Safety Administrator
Assistant Safety Administrator
Manager Corporate Quality Assurance On-Site
Corporate Quality Assurance Auditor
Manager of Central Placement
Manager of Professional Placement
Manager of Salary Administration
Manager of Industrial Relations
Instructors
Maintenance Supervisor
Instrument and Controls Supervisor
Support Facility Supervisor
Senior Reactor Operators
Reactor Operator (In training)
Nuclear Plant Operators
Shift Technical Advisors
Senior Watch Supervisors
Conventional Plant Operator
Test Engineer
Engineer
General Labor Supervisor
Material Controller
Storekeeper
Instrument Technician
Senior Production Technicians
Mechanic A
Quality Control Files and Inspection Coordinator
Instrument and Control Staff Engineer
Maintenance Staff Engineer
General Health Physics Supervisor
General Chemistry Supervisor
Health Physics Supervisors
Chemistry Supervisor
Emergency Preparedness Project Manager
Emergency Planning Coordinator
Corporate Emergency Response Plan Manager

II. CON EDISON PERSONNEL CONTACTED (Cont'd)

Director Chemical Section
Head Nuclear Environmental Monitoring Section
Public Information Officer
Director of Electronic Communications
Special Assistant to Senior Vice President, Public Affairs
Refueling Engineer
Reactor Engineer
Field Engineer
Design Engineer
Principal Engineer
Nuclear Systems Engineers
Chief Mechanical Engineer
Director Applications Engineering Services
Chief General Engineer
Chief Design Engineer