ENCLOSURE

INITIAL SALP REPORT

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE (SALP)

REPORT NO. 50-247/91-99

INDIAN POINT 2 NUCLEAR POWER PLANT

ASSESSMENT PERIOD:
MAY 1, 1991 - SEPTEMBER 26, 1992

BOARD MEETING DATE:
NOVEMBER 12, 1992

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I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) is an integrated Nuclear Regulatory Commission (NRC) staff effort to collect observations and data and to periodically evaluate licensee performance on the basis of this information. The SALP process is supplemental to normal regulatory processes used to ensure compliance with NRC rules and regulations. SALP is to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful feedback to licensee's management to promote quality and safety of plant operations.

An NRC SALP Board, composed of the staff members listed below, met on November 12, 1992 to review the collection of performance observations and data, and to assess the licensee's performance at Indian Point 2. This assessment was conducted in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." A summary of the guidance and evaluation criteria is provided in Section IV.D of this report.

This report is the NRC's assessment of the licensee's safety performance at Indian Point 2 for the period of May 1, 1991 to September 26, 1992.

The SALP Board was composed of:

Board Chairman:

J. Wiggins, Deputy Director, Division of Reactor Projects (DRP)

Board Members:

R. Capra, Director, Project Directorate I-1, Office of Nuclear Reactor Regulation (NRR)
R. Cooper, Director, Division of Radiation Safety and Safeguards (DRSS)
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II. SUMMARY OF RESULTS

II.A Overview

Activities at Indian Point 2 were conducted in a safe manner and an overall improving trend was noted in performance. Improvements were noted in radiological controls; maintenance; engineering and technical support; and safety assessment and quality verification areas. Superior performance in the operations area continued, however some minor operator performance problems were noted, especially with equipment status control. Training problems were noted in the emergency preparedness program and problems were identified in the surveillance test program area.

The operations staff demonstrated excellent performance. Response by the operators to abnormal operational events was excellent. Good teamwork was evident within the Nuclear Power Generation group. The watch engineer program added substantially to the effectiveness of the watch organization. Management involvement in critical plant activities continued to be a strength. Some problems were noted with equipment status control.

Improvements were observed in all aspects of the radiological controls program that resulted in a significantly higher level of performance in this area. The competence and training of the staff was a strength. Particularly noteworthy was Con Edison's performance in the area of radiation exposure reduction.

The maintenance, and instrumentation and controls departments continued to perform very well. Management involvement in these areas was strong. Maintenance planning and work coordination were considered to be a strength. However, while the routine surveillance program was effective, several communication errors detracted from overall performance in this program area.

The emergency preparedness program was effectively implemented. However, several weaknesses were noted in specific aspects of the training program and in methods to provide for an appropriate response to off-hours events. A strong commitment to ensuring a good relationship with the state and surrounding counties was evident.

An effective security program was maintained. Several program attributes demonstrated Con Edison's continuing commitment to a high quality security program.

Con Edison provided strong engineering support for site activities. A consistently high quality of engineering work was demonstrated. An emphasis on safety was evident in technical problem resolution and operability reviews. Notwithstanding the specific improvements noted, the failure to resolve some long-standing engineering issues associated with auxiliary feed and condensate system interactions resulted in the malfunction of the auxiliary feedwater system after a reactor trip.

Management continued to demonstrate a good safety perspective and involvement in daily plant activities. Maintenance of high standards and a commitment to safety were effectively communicated to plant personnel. Significant improvements in the corrective action programs were noted.

II.B Facility Performance Analysis Summary

FUNCTIONAL AREA	Rating, Trend Last Period	Rating, Trend This Period
1. Plant Operations	1	1
2. Radiological Controls	2 Improving	1
3. Maintenance/Surveillance	2	2
4. Emergency Preparedness	2	2
5. Security	1	1
6. Engineering and Technical Support	2 Improving	1
7. Safety Assessment/Quality Verification	2	2 Improving

Previous Assessment Period: April 1, 1990 to April 30, 1991

Present Assessment Period: May 1, 1991 to September 26, 1992

III. PERFORMANCE ANALYSIS

III.A Plant Operations

III.A.1 Analysis

The previous SALP rated this functional area as Category 1. Management involvement, training, and communications contributed to safe plant operation. Consolidated (Con) Edison was effective in communicating its commitment to procedure adherence and establishing safety as an essential element of watchstander performance. Good operation of the plant limited the effects of transients and minimized challenges to control room operators. Con Edison approached plant operations with a strong emphasis on safety.

During this assessment period, the operations staff demonstrated continued excellent performance. A strong emphasis on safety was demonstrated. Response by the operators to abnormal operational events was excellent. Good teamwork was exhibited by the various organizations in the Nuclear Power Generation group. The watch engineer program continued to improve and added substantially to the effectiveness of the watch organization. Management involvement in critical plant activities continued to be a strength. The training department was effective in preparing operators for qualification and requalification examinations. However, several problems during this assessment period were noted with respect to equipment status control.

The Operations Department repeatedly demonstrated a strong emphasis on safety. Preparations to support the repair of the spent fuel pit liner were thorough and well planned. Numerous contingency plans were developed to cover potential problems. Further, operations personnel were aggressive in pursuing minor reactor coolant system leaks. For example, when a leak in a residual heat removal valve was identified, the Operations Department worked closely with Plant Engineering to evaluate the impact of this leak. In addition, suspected high vibration on a reactor coolant pump was also aggressively pursued.

Strong operator performance was demonstrated during the period. The one notable exception was a reactor trip attributable to operator error. However, operator performance during the events leading up to the trip and during the trip itself was excellent. Operator performance during other abnormal events was also excellent. For example, operators took prompt and appropriate actions in response to an overtemperature delta T reactor trip. Additionally, operators responded very well to a reactor trip caused by a feed regulating valve failure. Con Edison's actions in response to the approach of Hurricane Bob were timely and professional. These actions included placing the plant in a hot shutdown condition. Operators had to shut the unit down twice because of condenser tube leaks which caused high chloride concentration in the steam generators. Both times, the operators placed the plant in a shutdown condition and mitigated the effects of the chloride intrusion in accordance with procedures.

Con Edison's licensed operator requalification program was effective. Three requalification examinations were conducted during this assessment period with satisfactory results. In addition, the staffing level in the Operations Department was ample to conduct the duties of the department.

Good teamwork and communications were evident among the various groups in Nuclear Power Generation Organization. The Training Department effectively interfaced with the Operations Department and Plant Engineering to develop operator training on completed modifications. This training was very thorough in scope and depth. The instructors were well prepared and thorough. Operations Manager briefings at the beginning of each Station Nuclear Safety Committee meeting were an effective way to inform other departments of operational issues. The daily meetings between senior managers in Nuclear Power Generation to discuss significant occurrence reports were evaluated as very effective. These meetings provided a forum for the prompt assignment of station priorities and corrective actions.

Within the Operations Department, communications and teamwork were excellent. The Operations Manager routinely conducted crew meetings with all licensed and non-licensed operators to discuss topics of concern. In addition, the Operations Manager initiated a station-wide, self-checking program to reduce personnel errors. The effectiveness of this program was not assessed since it started at the end of this SALP period. These types of initiatives were assessed as effective ways to provide and solicit feedback between the Operations Department management and staff. The daily meetings of the senior managers in the Operations Department were effective in managing priorities and resources. On each of the watch crews, extensive briefings by the Senior Watch Supervisor at the start of each watch were effective in disseminating information.

The watch engineer program continued to be a strength during this assessment period. The watch engineers are licensed senior reactor operators and are assigned as members of a watch section. The watch engineers provided good technical support to the senior watch supervisor on such items as procedure changes, jumpers, and technical specification interpretations. A requalification program evaluation conducted early in the period noted that the watch engineers were actively involved in plant operations.

Senior plant management continued to be actively involved in critical plant operations. During startup activities following the 1991 refueling outage, senior management provided around the clock coverage. In addition, senior plant management was actively involved in several other critical plant activities. These activities included the approach to criticality following a shutdown caused by condenser tube leaks, the emergency diesel generator jacket water and lube oil cooler repairs, and the three reactor trips which occurred.

In contrast to the otherwise excellent performance described above, a few minor weaknesses were noted in the area of equipment status control. For example, four valves in the emergency diesel generator air starting system were not aligned in accordance with the checkoff list. Also, the operational status of smoke detectors on a reactor coolant pump was not properly tracked which resulted in not taking the appropriate technical specification required action. In addition to these items, poor logkeeping practices by nuclear plant operators resulted in the position of a critical valve not being logged. This was assessed as one of the contributing factors to a reactor trip.

Also, an engineered safeguards actuation during containment venting demonstrated poor attention to detail on the part of an operator. Two events which occurred earlier in the assessment period were similar in nature. While individually these problems were not significant, collectively they present an area needing improvement.

Summary

The Operations Department operated the plant in a safe manner demonstrating excellent performance during operational transients. Good teamwork and communications were demonstrated by the groups in the Nuclear Power Generation organization. Within the Operations Department itself, excellent communications and teamwork resulted in superior performance. The watch engineer program was evaluated as a strength and contributed significantly to watch crew performance. Senior plant management was actively involved in plant operations. Weaknesses were noted in the area of equipment status control. The requalification program was evaluated as satisfactory.

III.A.2 Performance Rating: Category 1

III.B Radiological Controls

III.B.1 Analysis

This area was rated SALP Category 2 Improving during the previous assessment period. Strengths noted included management initiatives to improve the quality of the program, improved radiation worker training, good work control in the radiological areas, good root cause analyses of incidents, improved outage planning, and a well-qualified staff. Weaknesses included occasional poor communications between health physics and radiation workers in some situations.

Radiological Protection

The areas of strength noted during the previous assessment period continued to be areas of strength during this period. In addition, there was a focused effort by management and the supervisory staff to upgrade the radiological controls function on site. Management presence in the plant and at job locations increased over the previous period, included all levels of the supervisory staff and was effective. For example, the radiological assessor toured the plant and observed work in progress at least weekly, and was usually accompanied on these tours by the Vice President of Nuclear Power. Other management levels performed similar tours at frequent intervals. In addition, first line supervisors were well informed regarding the details of ongoing activities, frequently observed ongoing work, and attended prejob briefings. Management also initiated several efforts designed to improve the quality of work in the radiological areas and to increase awareness of ALARA concerns. Management also adopted a conservative approach to situations involving radiation exposure or environmental releases. Corrective actions following radiological events were prompt and thorough. For example, when it was suspected that there was a possibility of a small leak to the environment from the Unit 1 fuel storage pool, ion exchange units were immediately installed to reduce the level of radioactivity in the pool water. Good work practices were observed in the radiological controls areas, as well as good communications and access control. The efforts by management to improve the quality of the program have resulted in improvements in the control and safety of radiological work.

The ability of Con Edison to successfully resolve technical issues was demonstrated repeatedly. The plant designed or participated in the development of several robots and shielding arrangements that were successfully used to achieve substantial reductions in dose to personnel during outage work. These included concrete decontamination equipment, remote welding and milling equipment, and steam generator annulus and hand hole shields. Con Edison participated with the reactor vendor in qualifying the chemical process to be used in an upcoming full system chemical decontamination, and worked closely with vendors to develop the details of the decontamination process, installation of the necessary equipment, and handling and storage of the resulting waste.

Self-assessment programs in this area were improved and expanded over the period. These programs included worker compliance inspections, program audits, and radiological assessor inspections, in addition to the routinely scheduled QA audits and surveillances. The radiological incident reporting program was improved, and findings from this program as well as from the

worker compliance inspections were tabulated and categorized to identify weak areas; this and the subsequent associated corrective actions have resulted in a decline of incidents. In addition, as part of the maintenance quality improvement program, health physics personnel participated in assessments of jobs that involved radiation exposure to identify areas for improvement.

The staffing in the radiological controls area has been stable. Also the licensee successfully implemented a minor reorganization during the assessment period.

Con Edison's radiological safety training programs have continued to be a strength and have improved further during this period. The training material for radiation worker training was upgraded and the training program for health physics technicians was expanded to include specialized technical and systems topics. A continuing training program was also developed for the health physics supervisors. In addition to the formal training programs, Con Edison published periodic information sheets, such as Radiation Safety Talk and Radiation Safety Newsletter, in which radiation safety and ALARA topics and concerns were discussed. Monthly safety talks were also given.

Performance in the area of ALARA has shown a steady improvement since the past assessment period. Although the cumulative exposure for the last outage was high, about one half of that exposure was received in connection with non-routine steam generator girth weld repair work. This high exposure was due mainly to the existing radiological fields in the plant rather than poor performance in dose reduction efforts. For example, the dose accumulated per staff-hour spent in radiological areas dropped from 1989 to 1991, suggesting successful dose reduction techniques. Doses received during routine, repetitive steam generator work has declined steadily, from 1987 to 1991. Similarly, the average monthly non-outage exposure has dropped. There has also been a significant drop in the number of personnel contamination incidents. Efforts to achieve these results included better planning and ALARA measures, chemical decontamination of systems such as the CVCS and RHR, and extensive area decontamination efforts. The leakage reduction program reduced the number of identified system leaks by a factor of over three in slightly over a year. Source term reduction efforts, started during previous assessment periods, were continued during this period. These efforts included, in addition to those described above, inspection of all fuel assemblies prior to core reload; replacing existing fuel assemblies with low cobalt assemblies; installation of a low cobalt pressurizer valve; and flushing and desludging of pipes, tanks, and sumps to remove hot spots and reduce radiation fields. A full system chemical decontamination, the first of its kind for this type of reactor, has been scheduled in an effort to further reduce the source term. The licensee has demonstrated aggressive ALARA performance in spite of a high level of maintenance activities. Plant chemistry continues to be effectively controlled in accordance with technical specifications and industry guidelines.

Radiological Environmental Monitoring Program (REMP) and Radioactive Effluents Control Program

Con Edison conducted an effective radioactive effluent control program. Con Edison continued to upgrade the radiation monitoring system (RMS) in both Unit 1 and Unit 2. Also, Con Edison initiated two programs of tracking, verifying, and mapping pipe and drain systems through Unit

1 and those interfacing with Unit 2. Initial progress on these programs was considered adequate with increased emphasis evident after two minor spills. The licensee's subsequent effort with respect to these programs has been excellent with significant management support and oversight evident.

The radiological environmental monitoring program was effectively implemented. Con Edison implemented a very good Quality Assurance/Quality Control program to assure the validity of the analytical measurements for the REMP samples. The instrumentation and equipment in the meteorological monitoring program were well maintained and calibrated. Con Edison implemented an effective program for measuring radioactivity concentration in process and effluent samples and for measuring chemical parameters in plant systems.

Quality Assurance audits covered the stated objectives of both the Radiological Environmental Monitoring and the Effluents Control programs. They were thorough and of sufficient technical depth to assess the programmatic performance of the programs. Followup actions for identified deficiencies were appropriate.

Radwaste and Transportation

The radwaste and transportation program maintained the high level of performance observed during the previous assessment period. The program was amply staffed with well qualified and well trained personnel, and the program was well managed. The initial training and continuing training programs were also of high quality, as were the quality assurance audits. However, there were weaknesses in auditing of vendor services and vendor-generated data. Procedures were generally well written, but there were some omissions in statements of requirements, and some program activities were not in accordance with procedural requirements, although still technically sound. These problems did not result in any degradation in the quality of the program during this assessment period, but did represent potential problem areas. The problems were corrected by Con Edison before the end of the assessment period.

Summary

Improvements were observed in all aspects of the radiological controls program during this assessment period that resulted in a significantly higher level of performance in this area. The licensee's ALARA program was aggressive and effective. The radioactive effluents and environmental monitoring programs exhibited excellent program implementation. A high level of performance was also observed in the radwaste area despite relatively minor procedural difficulties.

III.B.2 Performance Rating: Category 1

III.C Maintenance/Surveillance

III.C.1 Analysis

The previous assessment rated Maintenance and Surveillance as Category 2. Management involvement in the maintenance process was noteworthy. Improvements occurred in several areas including failure analysis, upgrade of maintenance procedures, material condition and maintenance planning. Con Edison's surveillance testing and inservice inspection programs remained effective; however, some weaknesses existed in the reviews of procedure revisions and completed surveillance tests.

Maintenance

The improvements noted during the previous period continued through this assessment period. Management support of the maintenance program was evidenced by the resources applied to improve the performance of maintenance and to implement the corrective actions identified in Con Edison's maintenance self-assessment. Several programs were initiated to improve the quality of maintenance. Maintenance planning and coordination were considered to be a strength. While material failures have contributed to forced outages, they have not adversely impacted the operator's ability to safely run the facility.

Management involvement in the maintenance process was noteworthy and resulted in performance improvements. Frequent management tours of the plant were conducted to identify material condition deficiencies. Material condition of the plant improved. Management kept abreast of work order backlog and work status. Frequent communication sessions were held between upper management and supervisors. Efforts to instill a quality maintenance ethic were observed. Management standards and expectations were communicated to the work force through periodic maintenance publications, the maintenance quality improvement program and frequent staff meetings. Management attention to and awareness of activities associated with safety-related equipment were excellent. For example, during preventive maintenance, a minor degradation in emergency diesel generator (EDG) service water flow was identified. Attention to and resolution of this problem demonstrated a good safety perspective. In addition, excessive corrosion was noted in the EDG jacket water cooler, resulting in extensive repair efforts. A good safety perspective was demonstrated for the steam generator inspection port leak repair. Consideration of personnel hazards as well as plant safety was evident. In addition, good planning contributed to minimizing radiation exposure for the job.

Several programs were initiated to improve the quality of maintenance. Development of maintenance standards was a good initiative that used industry accepted maintenance practices to provide guidance and expectations for the performance of maintenance tasks. The maintenance training program was restructured to incorporate instruction in those maintenance standards. In addition, the construction of a new maintenance facility demonstrated management's commitment to improve maintenance performance.

The maintenance quality improvement program (MQIP) was considered a strength. The program routinely reviewed maintenance evolutions in detail to assess maintenance performance. The MQIP is an internal maintenance effort which provides an open forum to critique maintenance activities. All levels of the maintenance and support organizations participate. The MQIP was an effective mechanism to solicit feedback from persons involved to improve the process and has also been effective in improving radiation worker practices.

Good job planning and coordination, knowledgeable and experienced maintenance personnel, and solid engineering support contributed to well conducted maintenance activities. Sufficient staffing was maintained throughout the period. Maintenance planning, in particular, was considered to be a strength. For example, detailed work lists and photographs were used for a control room ventilation damper repair. Maintenance planning was effective during extensive repairs of the emergency diesel generator jacket water and lube oil coolers. The EDG cooler repair activities demonstrated strong maintenance work coordination, teamwork and project management. A good initiative was to critique the first activity prior to the start of the second activity. Another example of effective planning was shown in the repair of the coolant charging pump. For this activity, a spare unit was used to train maintenance personnel and to generate the procedure. Good management supervision in addition to good ALARA and radiation worker practices were demonstrated.

Maintenance procedures were considered to be of high quality. Format, content and human factors considerations were determined to be outstanding. Good procedure adherence was also observed during the performance of maintenance.

The Instrumentation and Controls group, in particular, demonstrated excellent performance during this assessment period. Efforts in resolving problems with intermediate range nuclear instrument control power fuses were thorough and demonstrated a proper safety perspective. In addition, the approach, methods and testing program used to determine the cause of the toxic gas monitor actuations were assessed as good.

Several other programs which support the plant were well implemented. Timely corrective action was taken for out of specification conditions; in particular, chloride intrusions due to condenser tube leaks. Close control of all aspects of personnel and procedure qualification, material, and inspection was maintained for Con Edison's welding program. Performance in this area was excellent. The erosion/corrosion control program was well implemented and

aggressive. Additionally, a good safety perspective was demonstrated in that piping was generally replaced early with upgraded material that was more resistant to erosion and corrosion. The use of the nuclear plant reliability data system (NPRDS) failure rate and root cause evaluations was extensive.

In general, electrical maintenance and testing practices were good. The electrical distribution system functional inspection (EDSFI) evaluated electrical distribution equipment maintenance and testing practices as good. However, a problem was noted in that the licensee lacked a procedure for 480V molded case circuit breaker testing.

Surveillance

Overall coordination and performance of the surveillance test program was good. A good practice was noted during performance of testing at the end of the cycle 10/11 refueling outage in that pre-evolution briefs were conducted prior to the test. This ensured that personnel were cognizant of precautions and limitations and understood the impact of the surveillance test on plant operations. Nonetheless, several problems were attributed to poor communication. Miscommunication contributed to an incorrect valve lineup during the performance of integrated leak rate testing. As a result of the plant electrical system configuration, an emergency diesel generator tripped during post modification testing. In the latter case, the impact of unrelated testing of the main turbine was not considered during the performance of the diesel generator test procedure. Corrective actions for these discrepancies were appropriate.

The routine surveillance test program applied to safety-related systems and components was effective. Weaknesses noted in the previous assessment period had been addressed. The scheduling and coordination of tests were good. Tests required by Technical Specifications were performed well and on time. An exception was noted during the EDSFI in that procedure inadequacy contributed to the failure to load emergency diesel generators to their full kVA rating during testing.

Con Edison's response to NRC Generic Letter 89-10 "Safety-Related Motor-Operated Valve (MOV) Testing and Surveillance" was acceptable. This Generic Letter (GL) recommended testing programs in addition to ASME Section XI requirements to assure valve operation under design basis conditions. Con Edison's programs were under development during this period, with full implementation scheduled for the 1995 refueling outage. However, initially it was not apparent that adequate management attention had been provided to meet this schedular commitment. Later in the SALP period, strong central engineering support was provided to address MOV GL requirements. Existing practices and program elements developed to date for MOV maintenance, trending, and training were adequate with minor discrepancies.

Con Edison has a good overall program for inservice inspection (ISI) of reactor coolant system (RCS) pressure boundary components. The ISI program was in accordance with ASME Section XI requirements. The ISI program includes a computerized system to ensure requirements are satisfied. Several program enhancements were noted such as Con Edison's program for steam generator tube eddy current testing exceeding the technical specification requirements. The larger inspection scope provided increased assurance of integrity. State of the art equipment was used for remote underwater ISI visual exams.

The Inservice Testing (IST) program for pumps and valves was adequately implemented, although several minor deficiencies in motor operated valve testing were identified. Con Edison subsequently corrected the discrepancies.

Summary

Management involvement in the maintenance process was noteworthy. Several programs were initiated to improve the quality of maintenance. Good job planning and coordination, knowledgeable and experienced maintenance personnel, and solid engineering support contributed to well conducted maintenance activities. The maintenance program continues to be implemented very well. The Instrumentation and Controls group demonstrated excellent performance. The surveillance test program remained effective; however, several communication errors detracted from an otherwise good program.

III.C.2 Performance Rating: Category 2

III.D Emergency Preparedness

III.D.1 Analysis

The previous SALP report rated EP as Category 2. Performance during the 1990 exercise was good. The siren system upgrade was noteworthy. Also, management involvement and the licensee's relationships with the four adjacent counties and the State of New York were strengths. Nuclear Quality Assurance (NQA) reviews and the EP training program were effective. Emergency Response Organization (ERO) staffing was adequate but training program administrative controls were weak.

During this assessment period, the EP program was, in general, well implemented. Management involvement was evident. The relationship with the four adjacent countries and the State of New York continued to be a program strength. Nuclear Quality Assurance (NQA) reviews were adequately implemented. Assurance of ERO capabilities remained adequate. Training program administrative controls improved. Training weaknesses existed in operator classification at the General Emergency level and in PAR development.

Licensee performance was good during the one event that occurred that required emergency classification and during the annual emergency exercise. The event involved the transportation of an injured-contaminated individual off-site which necessitated an Unusual Event declaration. Good overall response and prompt declaration were noted for this event. Good performance also was noted in the August 28, 1991 partial-participation emergency exercise. Operator evaluation of alternate power supplies was identified as an exercise strength. Additionally, the exercise benefitted from well-coordinated actions in the Emergency Operations Facility (EOF). Prior exercise performance concerns were resolved. Subsequent NRC review found that the EP discrepancies were properly reviewed and corrected.

Administration of the drill/exercise program was satisfactory. Three station drill/exercises and two mini-drills were conducted in 1992, exceeding requirements. Participation of ERO members in drills/exercises was good. Sufficient Health Physics and Operations support continued to be provided to the EP program by individuals outside the Site Protection Department. However, Emergency exercise scenario discrepancies were identified by the NRC in the 1991 and 1992 exercises {e.g., insufficient review to predict player responses, necessitating controller intervention to maintain the scenario timeline (1992); insufficient detail to facilitate play concerning the loss of residual heat removal capability (1991), and core damage being significantly greater than shown by plant indications (1992)}. Corrective actions were initiated, but the results have not yet been evaluated.

Overall, assurance of ERO capabilities was adequate. ERO positions were filled at least three deep. However, the licensee was found to be using informal methods to ensure that a sufficient number of qualified ERO personnel would respond to the site in the event of an off-hours radiological emergency. Although the licensee was within the frequency requirements of its emergency plan for off-hours mobilization drills, the last such drill was conducted in 1988; that frequency further indicates the need for more formal controls over off-hours response activities. The licensee initiated corrective actions to address this weakness, but the NRC has not yet evaluated their results.

EP training was adequate. New training administration directives were developed. The initial ERO qualification program was upgraded by the development of new lesson plans. Lesson plan content was good. Provision of general EP concepts through General Employee Training was appropriate. However, ERO annual qualification maintenance training was weak in that it consisted primarily of unsupervised, open-book, read-and-sign tests with a read-and-sign test question bank that was small. The licensee planned but had not yet implemented improvements in this area.

NRC identified additional training concerns late in the assessment period. A lack of senior operator practical training in General Emergency classification, in Protective Action Recommendation (PAR) development, and in notification of the NRC was a program weakness. Another training concern resulted from the disparate responses given to questions posed to Emergency Directors on EALs during NRC interviews. Also, there was a PAR procedure weakness in the lack of direction to update initial PARs based on dose projections and field measurements.

Overall, the EP staff performed acceptably. EP staffing level was stable and included Senior Reactor Operator and Health Physics expertise. Emergency Plan Implementing Procedures (EPIPs) generally were well stated and properly distributed. Emergency response facilities, equipment, and supplies were well maintained. However, discrepancies in emergency response facility surveillance reports reflected a weakness in documentation of actions taken to correct the discrepancies. Also, the unsuccessful Technical Support Center (TSC) ventilation system surveillance testing continued from the last SALP period and represented a recurring weakness in overview of this system's status.

Management support for the EP program was evident. Close interaction was evident between the Site Protection Manager (SPM), who had overall responsibility for EP, and senior station management. Station management maintained emergency response qualifications, reviewed and approved emergency plan and procedure changes, participated in drills and exercises, and interfaced with State and local agencies. Management provided resources for system enhancements that included upgrades to the Meteorological Information Data Acquisition System (a dose assessment model), to the off-site fixed radiation monitor system, and to EOF communication. The Operations Support Center was relocated to provide a larger working area. Notable off-site program support was provided to the adjacent Counties.

The licensee's EP audit program was well implemented. The Technical Specification audit was combined with the 10 CFR 50.54 (t) review. Within their scope, annual audits were thorough and received wide management distribution. The licensee utilized individuals with EP experience from other utilities to audit the technical aspects of EP. An example of audit effectiveness was the 1991 licensee EP audit finding that portions of the Public Information Emergency Response Plan and its implementing procedures needed to be incorporated into the Emergency Plan and submitted to the NRC. That was accomplished, showing effective corrective action for that problem. However, the audit did not identify items such as lack of senior operator practical training in general emergencies or the weakness in assurance of off-hours mobilization capability.

Summary

The EP program was generally well implemented. Strengths included EP audit implementation and the off-site interface with State of New York and the adjacent Counties. Exercise performance and response to an event were good. Training program administrative controls improved substantially. However, training weaknesses existed in operator classification at the General Emergency level and PAR development. Opportunities for improvement were noted in exercise scenario development and ERO qualification maintenance training. Corrective actions were under development for weaknesses identified late in the SALP period, and therefore, the results could not yet be evaluated.

III.D.2 Performance Rating: Category 2

III.D.3 Board Recommendation:

Training weaknesses must be addressed promptly to assure a continued adequate level of event response performance.

III.E Security

III.E.1 Analysis

During the previous assessment period, Con Edison's performance was rated as Category 1 based upon a very effective, performance-based security program with clear evidence of management support. Systems and equipment, as well as the training program, had been upgraded to strengthen plant security.

During this assessment period, the security program continued to be effective and performance-based. Corporate and plant security management's attention to and involvement in the program were evident through the continuation of improvements and enhancements to plant security. These included the procurement of three new security vehicles, the purchase of new weapons, the installation of an image capture system for personnel processing, and the acquisition of a bucket truck for maintenance work. Additionally, Con Edison made excellent progress on its upgrade of protected area lighting, perimeter fence, intrusion detection systems and assessment aids.

Corporate and plant security personnel remained active in industry groups dealing with nuclear plant security matters. Additionally, close and effective liaison with state and local law enforcement agencies was maintained through interface meetings and contingency drill participation.

The security program was administered by the Site Protection Manager, who is very knowledgeable of nuclear power plant security matters. Con Edison's security staff, was composed of well-trained and qualified security professionals, who provided effective oversight of the security program and maintained a very good rapport with the contracted security force. Con Edison and contractor management met weekly to review and discuss program implementation, and to correct, as necessary, any issues with potentially adverse program impact.

During this assessment period, the turnover rate in the security force decreased from about 16 percent to 8 percent due in part to proactive management actions. Staffing remained consistent with program needs and members of the security force exhibited a professional demeanor, high morale, and a very good knowledge and understanding of their duties.

The security force training program, administered by the security contractor was well developed and staffed by experienced and knowledgeable instructors. Training facilities and training aids were appropriate and well maintained. The effectiveness of training was apparent by the limited number of personnel errors. All lesson plans were revised, during this assessment period, to be more performance oriented and performance drills were developed to reinforce procedures and enhance tactical response training. Con Edison also provided resources to its security staff and contractor security personnel for technical and professional improvement training courses.

The plant maintenance department provided excellent support by assigning knowledgeable Instrumentation and Controls (I&C) personnel to perform corrective and preventive maintenance on security equipment. Repairs were accomplished promptly and effectively, as reflected by minimal security department overtime and a reduction in manned compensatory posts.

The annual audit of the security program was comprehensive in scope and depth and was performance-based. Con Edison used a nuclear security consultant to provide technical expertise to its Quality Assurance audit team. No adverse findings were identified and recommendations made to strengthen the program were promptly and effectively implemented. Additionally, Con Edison continued its initiative of conducting self-assessments and appraisals to provide additional oversight of program implementation and personnel performance.

Event reporting procedures were clear and consistent with NRC requirements. The reporting procedures were well understood and carried out by the security supervisors. Con Edison's security event logs indicated that all events were properly categorized and were appropriately analyzed, and tracked, with timely and appropriate corrective actions. No prompt reportable events occurred during the period.

Con Edison's Fitness-for-Duty (FFD) program and its implementation were found to be responsive to both the spirit and intent of the NRC's rule and were aggressive, comprehensive and directed toward assuring public health and safety.

Con Edison submitted one revision to its Physical Security Plan under the provisions of 10 CFR 50.54(p). The revision was technically sound and reflected well-developed policies and procedures, indicating appropriate management oversight and attention to quality.

Summary

Con Edison continued to maintain a very effective and performance-based program. Notable program strengths included excellent management support for improvements, very effective oversight, active participation in industry groups and liaison with law enforcement agencies, very professional and knowledgeable staff, high quality maintenance, performance oriented training and very good rapport among Con Edison and contractor management, and the security force. These attributes demonstrated Con Edison's commitment to a high quality security program.

III.E.2 Performance Rating: Category 1

III.F Engineering and Technical Support

III.F.1 Analysis

This area was rated as Category 2 with an improving trend in the previous SALP. Con Edison provided strong engineering support for site activities. Corporate management demonstrated good overall support of, attention to and involvement with the site. The design control and modification processes were effective. Strengths were considered to be the project file review team and engineering assurance self-assessment programs. The system engineering program provided increased support to operations and maintenance, although some weaknesses were noted.

During this SALP period, several actions were continued or initiated to improve engineering performance. Con Edison continued to provide strong corporate engineering support, attention to and involvement with the site. A consistently high quality of engineering work was demonstrated.

An emphasis on safety was evident in technical problem resolution and operability reviews. Several plant activities required extensive engineering involvement. These activities included repair of a steam generator inspection port, modification to the 125 VDC power supply and resolution of reactor cavity sump level indication problems. The engineering organization provided timely assessment with well documented safety evaluations which demonstrated a clear understanding of safety. Particularly noteworthy was the identification and repair of the Unit 2 spent fuel pool (SFP) leak. Radiological concerns, structural integrity and personnel safety issues were aggressively pursued.

Effective central engineering support was demonstrated. Good overall support of, attention to and involvement with the site was noted. Good communication between engineering and other site organizations was observed. The nuclear project engineering group provided a single source contact and technical oversight for planning and project engineering support. The high experience level of the group contributed to several successes. Several strengths were observed during the Electrical Distribution System Functional Inspection (EDSFI). These strengths demonstrated technical competence and a commitment to quality. Particularly noteworthy was Con Edison's efforts to monitor, review and correct EDSFI issues identified by the NRC at other plants. Good central engineering support contributed to the emergency diesel generator (EDG) jacket water and lube oil cooler repair. This was considered to be a well-conducted engineering and maintenance activity. After a slow start, strong central engineering support was provided to address the motor operated valve generic letter (GL) requirements.

Con Edison continued to conduct a viable and continuous training program for engineering and support personnel. The courses covered a wide spectrum of engineering subjects geared to improve the effectiveness of various groups. Procedural and technical training was conducted on several subjects including technical issues, codes and standards, safety reviews, fire protection, design and human factors.

A consistently high quality of engineering work was demonstrated. The engineering report on the spent fuel pool cooling pump motor replacement was thorough. The cause of the containment fan cooler unit trip during integrated leak rate testing was appropriately determined. Modification packages were well prepared. In one instance, however, a weakness was identified concerning the depth of engineering evaluation for a transfer scheme that was implemented to provide a more reliable control power source for the EDGs.

The self-assessment program remained strong. The engineering assurance program is a formal self-assessment program and was effective in identifying and correcting program performance problems. A post-project critique of modifications was also conducted which reviewed operational considerations and other lessons learned. A Project File Review Team (PFRT) provided a multi-disciplinary review of safety-related modification packages to ensure that documentation was complete and to assess the technical adequacy of the modification. Use of the PFRT was assessed as a good initiative. Con Edison continued to exercise an active quality assurance program in both central and site engineering. In the former, engineering reviews of equipment qualification, engineering calculations and design reviews were routinely performed for station activities covering repairs, modifications and replacements. Where deficiencies were noted, timely corrective actions were initiated.

In most cases, management responded well to safety-related issues. For example, the licensee's response to indications of EDG heat exchanger flow degradation was sound. In addition, EDG cooler corrosion problems were pursued in an appropriate manner. However, the licensee did not recognize nor resolve some long-standing engineering issues involving weak understanding of auxiliary feed and condensate system interactions. Additionally, calibration problems with weld channel and penetration pressurization system gauges were not resolved in a timely manner.

The system engineering program functioned well and provided increased support to maintenance and operations. A formal system engineer walkdown program was implemented. In general, the system engineer walkdowns performed were detailed and thorough with deficiencies appropriately corrected. System engineering support to maintenance was noteworthy. For example, the system engineering group provided 24-hour coverage during the extensive EDG jacket water and lube oil cooler repair.

Engineering support of operations was good. Evaluations of the causes of and corrective actions for reactor trips were sound. In addition, training for modifications completed during the 1991 refueling outage was thorough. The training scope was determined through the joint effort of the engineering, operations and training departments. Several engineering programs were particularly well managed. The erosion/corrosion program was well implemented. The active role of the engineering organization contributed to the effective control of the site welding

program. The equipment trending program and equipment failure analysis program were effective in identifying potential degradation in safety-related equipment.

Con Edison has initiated several long-term programs to improve plant safety and reliability. These programs include: (1) a fuse control program, (2) a service water system traveling screen material corrosion study, (3) full reactor coolant system decontamination scheduled for 1995, (4) validation and reconstitution of design basis for cable separation, and (5) upgrading of procurement specifications. These ongoing initiatives demonstrate a strong commitment to improve. In addition, Con Edison uses several computer programs to assist engineers in accomplishing their tasks. Programs for pipe stress calculations, piping analytical modeling, wiring and raceway, and automated drawing inventory increased the effectiveness of engineering activities.

Summary

In summary, Con Edison provided strong engineering support for site activities. Corporate management demonstrated good overall support of, attention to and involvement with the site. Contributing attributes included extensive pre-planning for modifications; training; an active quality assurance program; ongoing studies and programs to resolve technical issues; computer programs; and followup and critique of completed modifications. A consistently high quality of engineering work was demonstrated. An emphasis on safety was evident in technical problem resolution and operability reviews. Overall, engineering resolution of degraded equipment problems was good.

III.F.2 Performance Rating: Category 1

III.G Safety Assessment/Quality Verification

III.G.1 Analysis

During the previous assessment period, this functional area was rated as Category 2. Con Edison continued to demonstrate a good safety perspective in plant operations and event response. Management attention and involvement in daily plant activities and cooperation between corporate and site management were noteworthy. Con Edison's self-assessment process and Consolidated Improvement Program (CIP) resulted in improvements. Some weaknesses were noted in the implementation of the corrective action program.

During this assessment period, Con Edison was effective in ensuring safety and verifying quality. Management continued to demonstrate good safety perspective in event response and involvement in daily plant activities. Improvements in the corrective action program were noted, however, some corrective actions were not initially thorough enough to fully resolve technical problems.

Con Edison demonstrated an excellent safety perspective in plant operations and event response. For example, corrective actions in response to the inadvertent reactor trip, which was caused by a mispositioned valve, were rigorous and thorough. The identification of, and corrective actions for a steam generator shell-side drain leak were aggressive. In addition, for this activity, emphasis was placed on minimizing exposure by taking the unit off-line to effect the repair. The emphasis on safety shown during the identification and repair of the spent fuel pool leak was particularly noteworthy.

Management attention and involvement in daily plant activities and cooperation between corporate and site management were notable. Plant tours were conducted frequently by all levels of site and corporate management. Senior management around-the-clock involvement in startup activities following the refueling outage demonstrated a commitment to ensuring that startup activities were conducted in a safe manner. Con Edison management emphasized increased management involvement, extensive planning, appropriate procedures and additional training for infrequently performed evolutions. Examples where this management emphasis was highly effective were the emergency diesel generator jacket water and lube oil cooler repairs and the comprehensive preparations for coping with a potential strike.

Con Edison's self-assessment programs resulted in station improvements. Corporate engineering developed several programs which increased the quality of engineering performance. The corporate engineering quality assurance program included a formal self-assessment which was effective in identifying and correcting program performance problems. Detailed post-modification critiques were conducted to identify lessons learned. Self-assessment initiatives

resulted in improvements in the corrective action program. Con Edison continued their Safety System Functional Assessment (SSFA) program and recently completed SSFA's for the alternate safe shutdown and engineered safeguards actuation systems. Continuing implementation of the Consolidated Improvement Program resulted in several station improvements.

Nuclear Quality Assurance (NQA) audits performed during this period were consistently of high quality. The scope and technical depth of audits were thorough and contained quality recommendations. Corrective actions identified by audits received appropriate management attention and were properly tracked by the corrective action monitoring program. Particularly noteworthy was the recent corrective action program audit. This audit focused on the adequacy of Con Edison's various corrective action programs and provided a thorough analysis and recommendations for corrective action program improvements.

The safety review groups were effective in performing their intended functions. The Station Nuclear Safety Committee (SNSC) demonstrated effective participation, displayed a questioning attitude, and was technically thorough. Its effectiveness in implementing its review and audit function was assessed as good. The Nuclear Facilities Safety Committee (NFSC) demonstrated a proper safety perspective as evidenced by the in-depth discussions held on safety related matters requiring corrective actions. The Independent Safety Review Group (ISRG) continued to provide thorough evaluations. The ISRG was effective in shutdown planning to minimize risk and to coordinate activities with operations planning and the outage manager.

The program for monitoring industry experience remained effective. A senior engineer, reporting directly to the Vice President of Nuclear Power, conducted the Operating Experience Review (OER) program. The OER program was well implemented in its reviewing, tracking and providing corrective actions for industry operating experience information. Examples of effective performance were the review for applicability to Indian Point 2, of EDSFI issues identified at other sites and of the Ginna pre-separator drain tank rupture. Con Edison has continued to emphasize improving human performance and system reliability. Operations management initiated several programs to enhance human performance. These programs include a self-check concept, an upgrade of the operator training and qualification process, and the promotion of teamwork.

Con Edison's licensing submittals continued to be technically sound, thoroughly supported the requested actions or safety issues and were submitted in a timely manner. Responses to NRC bulletins and generic letters were timely and complete. For the 24-month operating cycle implementation, Con Edison was proactive in interacting with the NRC staff, thus ensuring an efficient review of license amendment requests. Safety evaluations supporting modifications performed under 10 CFR 50.59 were technically sound and provided appropriate bases for conclusions reached.

Improvements were noted in the corrective action control programs. Good controls were in place and were being adhered to for open item reports (OIR's), radiological occurrence reports (ROR's), and Station Administration Order (SAO) No. 132 station event reports. In particular, station event report and ROR root cause determinations and corrective actions were extensive. ROR's associated with Unit 1 and Unit 2 interface problems and the station event report for the April 13, 1992, reactor trip developed rigorous corrective actions based on thorough root cause and human performance improvement analysis. Improvements have been made in processing significant occurrence reports to clarify the areas of assignment, tracking, and closeout of recommendations. In December 1991 Con Edison initiated an enhanced corrective action program with the establishment of a Daily Management Review Group (DMRG). The DMRG was effective in evaluation of events. In addition, a quarterly corrective action effectiveness meeting provided an effective review of the performance of the corrective action control process.

In spite of improvements made, the corrective action program was not always successful in resolving longstanding issues. A poor understanding of and the failure to aggressively pursue a previously identified concern associated with auxiliary feedwater and condensate system interactions resulted in the malfunction of the auxiliary feedwater system on a reactor trip. Accountability for the resolution of longstanding weld channel and penetration pressurization system gauge calibration issues was not apparent, resulting in an out-of-calibration status for an extended period of time. In addition, the in-place corrective action program was not initially used for this problem.

Summary

Con Edison was effective in ensuring safety and verifying quality. Management continued to demonstrate good safety perspective in event response and involvement in daily plant activities. Overall, significant improvements were noted in the corrective action program. However, shortcomings were still identified associated with the auxiliary feedwater and condensate system interactions and the longstanding gauge calibration issue. Safety review groups continued to perform a thorough and effective review of issues. Quality assurance audits were consistently of high quality. Licensing actions continued to be technically sound, and supportive of resolution of the requested action or safety issue.

III.G.2 Performance Rating: Category 2 Improving

IV. SITE ACTIVITIES AND EVALUATION CRITERIA

IV.A Licensee Activities

Indian Point 2 began the SALP period shutdown for the cycle 10/11 refueling outage (RFO). A major activity completed during the RFO was steam generator girth weld repair. The unit was returned to service on July 14, 1991. In addition to the plant trips which occurred, five additional forced outages occurred. Several power reductions occurred as a result of high steam generator chloride concentration caused by condenser tube leaks. At the end of the assessment period, Indian Point 2 was at 100% power.

IV.B NRC Inspection and Review Activities

An NRC senior resident inspector was assigned to Indian Point 2 throughout this assessment period. Additionally, an NRC resident inspector was assigned to the site from the beginning of the assessment period until November 1991 and from April 1992 to the end of the assessment period. NRC team inspections were conducted in the following areas:

The resident inspector staff was augmented from June 9 to July 20, 1991 to monitor startup activities following the refueling outage.

An Electrical Distribution System Functional Inspection was conducted from September 30 through October 11, 1991.

A Motor-Operated Valve team inspection was conducted from February 10 to 14, 1992 and April 30, 1992.

The resident inspector staff was augmented from April 14 to 15, 1992 to evaluate operator performance during a plant trip.

An Emergency Preparedness team inspection was conducted from July 20 to 24, 1992; and on August 18, 1992.

IV.C SALP Evaluation Criteria

Licensee performance is assessed in selected functional areas, depending on whether the facility is in a construction or operational phase. Functional areas normally represent areas significant to nuclear safety and the environment. Some functional areas may not be assessed because of little or no licensee activities or lack of meaningful observations. Special areas may be added to highlight significant observations.

The following evaluation criterion were used, as applicable, to assess each functional area:

1. Assurance of quality, including management involvement and control;

2. Approach to the identification and resolution of technical issues from a safety standpoint;

3. Enforcement history;

4. Operational events (including response to, analysis of, reporting of, and corrective actions for);

5. Staffing (including management); and,

6. Training and qualification effectiveness.

Based upon the SALP Board assessment, each functional area evaluated is classified into one of three performance categories. The definitions of these performance categories are:

Category 1: Licensee management attention to and involvement in nuclear safety or safeguards activities resulted in a superior level of performance. NRC will consider reduced levels of inspection effort.

Category 2. Licensee management attention to and involvement in nuclear safety or safeguards activities resulted in a good level of performance. NRC will consider maintaining normal levels of inspection effort.

Category 3. Licensee management attention to or involvement in nuclear safety or safeguards activities resulted in an acceptable level of performance; however, because of the NRC's concern that a decrease in performance may approach or reach an unacceptable level, NRC will consider increased levels of inspection efforts.

Category N. Insufficient information exists to support an assessment of licensee performance. These cases would include instances in which a rating could not be developed because of insufficient licensee activity or insufficient NRC inspection.

The SALP Board may include an appraisal of the performance trend in a functional area for use as a predictive indicator. Licensee performance during the assessment period is examined to determine whether a trend exists. Normally, this performance trend would only be used if both a definite trend is discernible and continuation of the trend would result in a change in performance rating.

The trend, if used, is defined as:

Improving: Licensee performance was determined to be improving during the assessment period.

Declining: Licensee performance was determined to be declining during the assessment period and the licensee had not taken meaningful steps to address this pattern.