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July 14, 1998

Re: Indian Point Unit No. 2
Docket No. 50-247

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

SUBJECT: Reply to Notice of Violation
Inspection Report 50-247/98-03

The attachment to this letter constitutes Con Edison's reply to the Notice of Violations (NOV) included with your June 11, 1998 letter concerning the inspection conducted from March 24, 1998 through May 11, 1998 at the Indian Point 2 facility.

Should you have any questions regarding this matter, please contact Mr. Charles W. Jackson, Manager, Nuclear Safety and Licensing.

Very truly yours,

Paul H. Kinkel

Attachment

cc: Mr. Hubert J. Miller
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ATTACHMENT
REPLY TO NOTICE OF VIOLATION

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
DOCKET NO. 50-247
JULY 1998

NOTICE OF VIOLATION

Inspection report 50-247/98-03 contained six Notices of Violation listed and responded to below as A through F:

- A. 10 CFR 50 Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed by documented instructions or procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions or procedures.

Contrary to this requirement, modification work was performed on the 21 emergency diesel generator (EDG) on February 19, 1998, that rendered the EDG field flash circuit inoperable as a result of a wiring error. On May 2, 1998, the 25 service water pump (SWP) breaker exhibited anomalous behavior that resulted from two wiring errors introduced during modification work. These wiring errors occurred despite the use of double verification during the modification work. This constitutes a failure to accomplish activities in accordance with documented instructions or procedures.

This is a Severity Level IV Violation (Supplement I).

Reply to Violation A

We acknowledge the concern addressed by this violation and agree that the work process of double verification in the cases listed below did not fully meet its objective of assuring that the wiring was properly installed.

1. Seven (7) service water breakers were successfully completed utilizing the work verification steps and instructions for this modification. In addition to the main body of the work verification package, standard disconnect and termination sheets were utilized to verify the work performed. On February 17, 1998 two separate breaker compartments (5A & 3C) were worked on with one work crew assigned to each breaker. The crew from 5A was assigned to 3C after change of shift. Two separate wiring problems were discovered in the 3C compartment during the post maintenance test (PMT) prior to placing the breaker in operation. In the first instance the work crew did not remove a jumper that was located on the external side. This jumper was hidden and could not easily be seen. When the crew supervisor asked if this jumper, from terminal 1 to terminal 9, was removed, the crew incorrectly believed the supervisor was referring to an internal side jumper they had removed earlier, which had the same terminal numbers. Consequently, the supervisor was informed that what he believed to be the external side jumper had been removed. The miss communication between the work crew and the supervisor, was compounded in that only one side of the terminal block termination sheet was in the work verification package. This incident is being scheduled to be presented as a Lessons Learned example in the continuing training program for electrical construction workers at the IP2 station.

The second wiring problem occurred on the internal side of terminal 10. A gray wire on that side was to be lifted but the mechanic lifted the white wire on the external side instead and

documented this in the work verification package. A subsequent review of the wiring drawing determined that the drawing was the source of confusion regarding the correct wire to be lifted. A review of electrical drawings will be performed to determine the appropriate method of display related to the designation of internal versus external wiring termination points. The review is scheduled for completion on or before October 30, 1998.

2. In accordance with material substitution authorization procedure (MSAP) the K-3 relay was replaced on 21EDG. The relay is associated with the field flash circuit. The relay was replaced in accordance with I&C Work Step list IC-SL-064, Revision 0. The work step list was detailed and included a diagram that required recording 'as found' and 'as left' wiring positions on the relay. The I&C technicians who replaced the 21EDG relay followed the work step list without carefully comparing its sketch to actual conditions. While using the sketch, the technicians erroneously recorded at least one of the as-found leads. As a result, the technicians, who installed the replacement relay, attached a lead to a normally-open instead of a normally-closed contact.

The event was reviewed with all I&C technicians, including a training session on the field flash circuit. Additionally I&C Administrative Directive No. 2 was revised to include examples of independent verification. These examples were reviewed with the I&C technicians. Further corrective actions include : a) Clarification of the requirements and detail in work step lists, and implementation of component level post maintenance testing whenever possible; b) Requiring sketches in step lists to be supported by a field walk down commensurate with risk significance of structures, systems and components (SSC). c) Reinforcing to all technicians and mechanics the importance of self-checking and a questioning attitude, even in apparently routine jobs; d) Ensuring careful job turnover and the use of error-reducing techniques whenever personnel are substituted before completion of a job; and e) Developing required reading for all ESP personnel to ensure adequate consideration of interactions and dependencies when replacing components within the design change process. Corrective actions for items a through d is scheduled to be completed by Nov 20, 1998. Corrective actions for item e is scheduled to be completed by July 31, 1998.

B. Technical Specification (TS) Section 6.8.1 requires that written procedures be implemented covering activities referenced in Regulatory (Safety) Guide 1.33, November 1972. Appendix A of Regulatory Guide 1.33 recommends written procedures that govern procedure adherence. Station Administrative Order (SAO)-133, "Procedure, Technical Specification and License Adherence and Use Policy," Section 5.1.1, states that procedures shall be followed. System Operating Procedure (SOP) 27.3.1, "Emergency Diesel Generator (EDG) Manual Operation," step 3.1 requires the EDGs be aligned per check-off-list (COL) 27.3.1, "Diesel Generators." COL 27.3.1, Section 3.2, aligns both air start motors on the 21 EDG in service.

Contrary to these requirements, on April 4, 1998, SOP 27.3.1 was used to start the 21 EDG several times with one of the two air start motors alternately isolated, without obtaining a temporary procedure change to allow this.

This is a Severity Level IV Violation (Supplement I).

Reply to Violation B

We acknowledge the concern addressed by this violation and agree that SOP 27.3.1 was used to start 21 emergency diesel generator without being modified with a temporary procedure change required for that particular system configuration.

Emergency diesel generators (EDGs) are started with one of two air motors isolated during our monthly surveillance test. On April 4, 1998 during troubleshooting of 21 EDG, which was performed to determine the cause of delayed starting times on 21 EDG, station operating procedure SOP 27.3.1 was used to start the diesel. Air start motors were being alternatively isolated to determine the impact of starting times. No specific procedural direction was provided for this isolation and no specific direction was given to restore the equipment to its operating configuration after test completion.

The cause of the occurrence has been determined to be inadequacies in procedural direction and in attention by the operators to procedural adherence (failure to implement temporary procedure change) during troubleshooting activities under cold shutdown conditions. To minimize the likelihood of recurrence, an Operation Standards & Expectations document has been completed which provides guidance on procedure adherence and configuration control. The content of this document has been discussed with all the watch crews. In addition, this particular event has been reviewed with operating personnel with emphasis on how personnel did not fully meet expected standards. These corrective actions as described above have been completed.

- C. 10 CFR 50 Appendix B, Criterion XVI, in part, requires that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment are promptly identified and corrected.

Contrary to this requirement, in 1994, the service water traveling screen heaters were found to be inoperable, a condition adverse to quality, and prompt action was not taken to evaluate and correct this condition.

This is a Severity Level IV Violation (Supplement I).

(Note: No response to this violation is required as similar issues have been identified for escalated enforcement in NRC Inspection Report 50-247/97-015, and Con Edison's response to the enforcement action, when issued, will encompass the issue identified in this violation regarding the evaluation of degraded conditions.)

Reply to Violation C

We acknowledge the concern addressed by this violation and agree that there was a delay in response to correct and evaluate this condition. No response to this violation is required as noted in item C above.

- D 10 CFR 50 Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed by documented instructions or procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions or procedures.

Contrary to this requirement, on March 27, 1998, modification work was performed on the reactor vessel head vent system, an activity affecting quality, with an informal understanding that the head vent pathway would be maintained during this activity. However, by failing to document this understanding in instructions or procedures, the head vent pathway was inadvertently removed, which led to an unnecessary level perturbation of reactor coolant that required operator intervention on March 30, 1998.

This is a Severity Level IV Violation (Supplement I).

Reply to Violation D

We acknowledge that the concern addressed by this violation relates to informality in the work control process, including communication and coordination, with respect to the reactor head vent modification. On March 30, 1998, the reactor was in a cold shutdown condition with the RCS depressurized and vented via the pressurizer. At approximately 1730 hrs. on Monday, March 30, 1998, Construction installed a modification to the reactor head vent path. The vent path for the reactor head prior to the installation of the modification was through valve 500 to the containment atmosphere (valve 500 was open). When the work crew connected the piping to the outlet, grayloc connector, downstream of valve 500, the vent path for the reactor head was lost. Although valve 500 was open, the check valve bypass valve # 5964 was closed, resulting in no communication path between the reactor head and atmosphere.

The operating crew was unaware the spool piece was being installed. The operating crew noticed an indicated increase in pressurizer level. The increase was quantified at 0.8 gpm. As a result the operators diverted 702 gallons from the pressurizer to 22 CVCS hold up tank.

The operators investigated the source of the indicated change in pressurizer level and discovered the grayloc connector was connected to the head vent and that valve 5964 was closed. This configuration did not provide a vent path for the reactor head. It allowed creation of a gas bubble in the reactor head, thereby forcing RCS fluid into the pressurizer resulting in an increase in pressurizer level, and providing the indication that RCS level was increasing.

On the afternoon of March 27, 1998, SAO-405 a pre-implementation meeting was convened by System Engineering with representatives from OPS and Construction and System Engineering. An agreement was reached, as described by the OPS representative, that work would be performed under an area permit, working with OPS and I&C, to ensure the vent path was maintained.

The use of an area permit to control evolutions that change plant configuration is identified as the root cause of this incident. Although area permits are allowed by OAD-19 to be used to investigate, troubleshoot, cycle a component for maintenance OR testing, their use is less than adequate to control plant modifications which tie into plant systems and change plant configuration. Such use is in conflict with OAD-6 "Equipment Status Identification" definition of control status. This loss of configuration control resulted in a minor RCS level transient. Work authorized under the area work permit included "work with OPS & I&C remove mansell level monitor and perform modifications to head vent line." The Night Order Book (NOB) entry for March 27, 1998 did not state any requirements for Construction to coordinate reattachment of the spool piece with the watch crew.

Proposed corrective actions include the following items:

1. Revise the applicable administrative procedures to identify that Area Permits must clearly contain applicable restrictions which limit the scope of work; 2. Revise procedural guidelines to include modifications that impact or alter plant configuration as an example of activities that require operations planning; and 3. Communicate the changes to all Operations personnel. Implementation of these items is scheduled for completion on or before September 30, 1998.

E. 10 CFR 50 Appendix B, Criterion II, states in part, that a quality assurance program shall be established which complies with the requirements of Appendix B. Con Edison's Quality Assurance Program Description, Revision 14, March 21, 1998, states that for plant maintenance and modification, examination checks and inspections are normally accomplished by supervisors responsible for the work. When independent examinations are deemed necessary, the examinations are accomplished by personnel who did not perform the work and who did not directly supervise the work.

Contrary to this requirement, on April 23, 1998, a quality control inspector responsible for independently verifying the correct torque values applied to the pressurizer code safety flange studs participated in the performance of the work by reading the required hydraulic pressures from the maintenance procedure and providing this information to the mechanics actually performing the work. As a consequence of not maintaining independence, the valve studs were over torqued as incorrect torque values were specified due to an error in reading the conversion charts.

This is a Severity Level IV Violation (Supplement I).

Reply to Violation E

We acknowledge that a Quality Control inspector inappropriately participated in the performance of the work for the torquing of valve PCV-466.

On April 22, 1998, the night shift crew of House Maintenance was assigned the task of reinstalling PCV-466. During the pre-job briefing, without QC present, the House Maintenance Supervisor commented to his crew that this very same valve had previously been over torqued. The crew then discussed their individual job responsibilities. The inlet flange bolting was torqued first. During the last pass on the torque of the outlet flange

bolting with the Hytorc machine the QC inspector questioned the torque value. At that time it was decided the crew was using a too high torque value.

During the reinstallation of valve PCV-466 the Quality Control inspector inappropriately participated in the performance of the work for the torquing of the valve flange by reading torque values from a chart to the crew. As a consequence, the inspector lost his functional ability to act independently. As a result of the over torquing, the contractor inspector was released from service. In addition, principals of the contractor firm performed and have completed the following: 1) additional documented training to all staff; 2) an inspection performance demonstration with appropriate scenarios challenging independence for each inspector; 3) a reiteration of Site Specific Training (one day); 4) provision of a Site Lead to accompany inspectors to the field, on a rotating basis, to assure appropriate application of procedures and performance.

A detailed analysis of the event, as described by a Con Edison root cause report and a detailed analysis of the root causes by the contracting firm revealed additional contributing factors to the incident. These included the inadequacy of the procedures, inadequate instructions including pre-job briefing, and access to multiple charts and torquing devices when only one set was necessary.

Based on the above information the following corrective actions are being implemented:

- a) The event will be reviewed in continuing training for ESP and Maintenance personnel, and QC personnel will be included in selected maintenance and ESP training. (Scheduled for completion on or before December 31, 1998)
- b) SAO-251, Conduct of Maintenance has been modified to stipulate the expectations for pre-job briefs. (Complete);
- c) QA Department to develop an expectation procedure for QC independence and gives examples. Train QC personnel including contract support. (Scheduled for completion on or before July 30, 1998);
- d) Assess the understanding of inspector independence among QC inspectors. (Complete);
- e) Conduct tailgate sessions for the Maintenance Department on the independence of the QC inspector. (Complete);
- f) Return pressurizer safety valve to the vendor for technical analysis. (Complete);
- g) Modify the applicable maintenance procedure, to specify the type head and pressure to be used for the job. (Complete);
- h) Review other procedures that use hydraulic torquing tools, e.g. SI pumps, main turbine, heater drains, etc., and evaluate changing the procedures to specify the type of head and pressure to be used. (Scheduled for completion on or before September 30, 1998); and
- i) Develop an improved process for the issuance of torque multipliers and hydraulic torquing tools, e.g., single chart per head, color coding heads to corresponding charts, etc. (Scheduled for completion on or before September 30, 1998).

F. Technical Specification (TS) Section 6.8.1 requires that written procedures be implemented covering activities referenced in Regulatory (Safety) Guide 1.33, November 1972. Appendix A of Regulatory Guide 1.33 recommends written procedures that govern procedure adherence. Station Administrative Order (SAO)-133, "Procedure, Technical Specification and License Adherence and Use Policy," Section 5.1.1, states that procedures shall be followed. Station Administrative Order (SAO)-405, "Modifications to Indian Point Facilities," Section 3.10, states that: "The Startup Authorization is used to ensure and document that all the requirements for the modification have been met prior to the equipment being returned to service."

Contrary to this requirement, on March 31, 1998, and again on April 19, 1998, the reactor head vent line was placed into service following modification without completing a startup authorization.

This is a Severity Level IV Violation (Supplement I).

Reply to Violation F

We acknowledge the concern addressed by this violation and agree that the use of startup authorization form for generic modifications is not clearly addressed in procedures. SAO 405 "Modifications to Indian Point Facilities" is the primary document for controlling plant modifications. The interpretation and practice for modification tracking, which is a checklist review for modification impact on plant programs is determined during the implementation phase. Step 4.6.3 Implementation Phase initiates the determination for a pre-implementation meeting and modification tracking. This step initiates modification tracking and exempts modification tracking for Generic modifications and those modifications waived from tracking by the Manager of System Engineering.

Modifications which have waivers and Generic modifications have been determined to not to have an impact on plant programs and therefore do not require modification tracking and a start-up authorization form. In these cases upon completion of the modification the systems are returned to service following normal plant work process and are declared operable after successful completion of the Post Modification Testing.

The Reactor Vessel Head Vent modification was accomplished in three phases using a different work order for each phase. The work performed consisted of installation 3 generic modifications. One phase installed the Generic Support Modification(FFX-91-07049). A second phase installed Generic Piping Modification (MFI-88-01408-M), and yet another phase installed the Generic Valve Modification FFI-82-20833.

The work being accomplished by this modification was mainly corrective in nature and was considered to have not impact on plant operation, maintenance and testing. It corrected deficiencies in the original design and piping installation to provide better condensate drainage, hence better communication between the reactor head and pressurizer relief line.

A total of nine post maintenance tests (PMTs) were associated with the 3 work orders under which this work was performed. Four of these PMTs involved insuring that the line was clear

of obstruction and would provide an adequate path for communication between the head and pressurizer. One PMT verified that the new manual head vent valve would stroke properly. The remaining PMTs verified the safety-related functions of this line and involved high pressure hydrostatic testing of the vent line (RCS Hydro) and verification of adequate venting capability (PT-R73), which is required to be performed at a higher plant mode (RCS > 200 F).

The first group of PMTs were successfully performed satisfying that the line would provide adequate communication between the reactor head and pressurizer relief line thereby allowing it to be utilized during cold shutdown. Therefore this portion of the work was declared operable after these PMTs were completed.

One portion of the work being done added an additional Grayloc fitting which would permit a level transmitter to be installed "in-line" when the head and pressurizer relief line are cross connected during cold shutdown. This is consistent with the original intended design of the system which was installed during the 1995 refueling outage during a previous modification, "RCS redundant level indicator at drain down". However, because changes in operating procedures and training would be required to instruct the operators on how to install the drain down meter due to the addition of a new fitting (most likely during the next scheduled refueling outage in 1999) and were desired prior to installing the level transmitter, the System Engineering Manager elected to track the implementation of this portion of the work in accordance with SAO-405. The remaining two PMTs which tested the safety-related functions of the vent line, (RCS Pressure Boundary and Post Accident Venting functions) are not yet completed. The testing requires a higher plant mode with RCS pressurized and > 200 F.

On April 19, 1998 prior to placing the vent line in service the System Engineer reviewed the work performed in accordance with SAO-405. During this review the System Engineer is required to await completion of the safety related PMTs described in the paragraph above prior to signing off the modification startup authorization form which is a procedure requirement. Additionally the "in-line" installation of the level transmitter would not be utilized until the next RFO. For these reasons no startup authorization was deemed to be required prior to use of the vent line for the non-safety related application in its current configuration. The startup authorization will be completed in accordance with SAO-405 and SE-Q-12.207 upon successful completion of the two safety related PMTs. This will be done prior to Plant startup and prior to any use of the level transmitter in the "in line" configuration.

Startup authorizations are not used for generic modifications. SAO-405, Rev. 14 has been revised to clarify under which conditions a generic modification shall require a modification tracking waiver form and/ or a pre-implementation meeting. The SAO-405 update, which has been completed, was intended to provide assurance that the use of modification tracking waiver form for generic modifications is properly documented for future use.