May 31, 2006

The Honorable Hillary Rodham Clinton
United States Senate
Washington, D.C. 20510

Dear Senator Clinton:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your letter of April 3, 2006, regarding the NRC's plans for conducting engineering and emergency preparedness inspections at the Indian Point nuclear power plant. In response to my letter of March 28, 2006, you requested additional details regarding planned engineering and emergency preparedness reviews.

As discussed in my previous letter, the NRC is an independent regulatory agency established by Congress, and our inspection and assessment processes are independent, thorough, and objective. The extensive engineering team inspection is one of a set of inspections that is required to be conducted at all operating nuclear reactor facilities pursuant to the NRC's Reactor Oversight Process (ROP). This set of inspections forms the ROP's baseline inspection program. The ROP requires that inspections be performed in seven fundamental areas (cornerstones) to measure plant performance and ensure safe plant operation. The baseline inspections address the areas you mention in your letter for an Independent Safety Assessment (ISA). Specifically, the inspections performed by NRC resident inspectors and regional specialists routinely evaluate plant design, modifications, maintenance, and operations. The ROP is a flexible risk-informed process that focuses inspections on those activities or areas that are risk significant (i.e., important to plant safety based on each plant's unique design) and has a framework that increases the level of scrutiny to focus on elements of a licensee's performance that appear to be declining.

The NRC recently undertook a substantial effort to strengthen its engineering inspection procedures to increase the scrutiny of operator actions and risk significant components with lower safety margin. This additional and specific attention improves the effectiveness of the engineering design team inspections. To develop the new engineering inspection procedure, the staff analyzed data from NRC engineering design team inspections and licensee self-assessment efforts to assess how effective they were in identifying engineering design issues. The information gained from the analysis led to the development of a prototype inspection procedure. This prototype inspection procedure differed from the former Safety System Design and Performance Capability inspection procedure (SSD&PC) in that: 1) the inspection samples are not limited to one or two systems, but instead focus on risk-significant, low-margin components and operator actions; 2) the inspection samples are not limited to mitigating system components (i.e., components important after a reactor event occurs), but may also include components that could contribute to or initiate a plant event; and, 3) significant effort is spent assessing relevant industry operating experience associated with the samples selected for inspection. The prototype inspection procedure was piloted at four sites, and analysis of the inspection results indicated that the new inspection approach was a significant improvement over the previous approach.

The new component-based inspection ensures that the selected components are capable of performing their intended safety functions by verifying that the design bases have been properly implemented and maintained. This inspection involves four weeks of on-site effort and about 700 hours of inspection by a multi-disciplined team of engineers. Each inspection team is assigned two contractors who have extensive design experience, and their contract contains certain restrictions to address conflict of interest issues. In conducting the inspection, the team performs a detailed design review of numerous key components selected after careful analysis. The review includes evaluating the adequacy of the engineering calculations and analyses, the installed configuration, operating procedures, and testing and maintenance activities. A similar process is used to select and inspect risk significant operator actions, such as opening or closing key valves or starting or stopping key pumps. Copies of the new engineering team design inspection procedure can be obtained at our website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html by selecting IP 71111.21 Component Design Bases Inspection.

In addition to the component design bases inspection, the NRC dedicates a significant amount of the ROP baseline inspection to the evaluation of other plant activities such as evaluation of changes and tests, fire protection, permanent and temporary plant modifications, maintenance effectiveness, performance of heat transfer (i.e., cooling) equipment, operability evaluations, surveillance testing, post-maintenance testing, and, piping and pressure vessel boundary inspection. Therefore, NRC resident inspectors and regional specialists routinely evaluate work performed by the licensee to determine whether such activities support safe plant operation. As such, the systems identified for review in the legislation you proposed are covered by our routine inspection program, and our current inspection process for engineering team inspections identifies components that are more significant in ensuring plant safety than most of the systems listed in the proposed legislation.

The 1996 Maine Yankee ISA was a customized inspection, prompted by significant problems identified in the computer codes that modeled aspects of the emergency core cooling system performance. As described above, the NRC has significantly enhanced its baseline inspection program since the Maine Yankee ISA was performed. In addition, the Indian Point units have received significant engineering team inspections since 1998 to evaluate conformance to the design and licensing bases. Specifically, Indian Point Unit 2 was one of four plants in NRC Region I to receive an architect engineering team inspection in 1998. Since the current ROP was implemented more than six years ago, there have been three engineering design team inspections at Indian Point Unit 3 and two at Unit 2. In lieu of the engineering design team inspection at Unit 2 in 2001, the NRC performed a supplemental team inspection to address multiple performance deficiencies identified at the unit. This inspection had significantly more resources and covered more areas than a routine engineering team inspection and is very comparable to the system-type reviews performed at Maine Yankee. A copy of this inspection report is included in Enclosure 1. In addition, engineering team inspections are currently scheduled at each of the Indian Point units in 2007. The Commission believes that this series of inspections is sufficiently extensive and comprehensive to evaluate engineering design and performance at Indian Point.

In response to your request for a comprehensive evaluation of the radiological emergency plan at Indian Point, I believe that a number of planned programmatic activities, in addition to new initiatives, may address your concern. Radiological emergency preparedness at a nuclear power reactor is one element in protecting the public from a spectrum of potential man-made and natural events. The NRC has been improving emergency preparedness programs. In January 2004, the NRC announced the establishment of an Emergency Preparedness Project Office to enhance the effectiveness of emergency preparedness. Additional organizational changes have been made to improve emergency preparedness capabilities including coordination with State, local, and public stakeholders.

Emergency planning is performed by multiple entities, including the plant operator, State and local government officials, and by administrators of public and private facilities such as schools and hospitals. NRC emergency preparedness regulations require the development of a range of protective actions with the goal of minimizing radiation exposure to the public during a postulated radiological event. The specific protective action to be implemented depends on local factors and is guided by protective action guidelines developed by the U.S. Environmental Protection Agency (EPA). The EPA protective action guidelines reflect EPA's judgment concerning acceptable levels of risk to public health from radiation exposure. The NRC has supplemented EPA guidance to provide protective measures for postulated severe reactor accidents. The NRC believes that these guidelines constitute appropriate advice to State and local decision makers, who must make the final decision regarding protective actions for the public in the event of an emergency.

Federal oversight of the implementation of radiological emergency planning and preparedness associated with commercial nuclear facilities involves both the Department of Homeland Security (DHS) and the NRC. Consistent with former President Carter's directive in December 1979 and the longstanding Memorandum of Understanding between the Federal Emergency Management Agency (FEMA, now part of DHS) and NRC, DHS takes the lead in reviewing and assessing off-site planning and response and assisting State and local governments, while the NRC reviews and assesses the on-site planning and response. DHS findings and determinations as to the adequacy and capability of implementing off-site plans are communicated to the NRC. The NRC reviews DHS findings and performs on-site assessments as part of the NRC’s oversight of the overall state of emergency preparedness for each site. Further, the NRC notes that FEMA reviewed and responded to the concerns identified in the "Witt Report" during the evaluation of the September 2002 emergency exercise at Indian Point. FEMA’s response is included in Enclosure 2.

Reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at Indian Point is supported by the NRC’s review of DHS findings and determinations regarding State and local plans and the NRC’s assessment of the licensee's on-site emergency plans, as well as the results of the ROP. NRC’s planned ROP inspection activities for 2005-2006 in the emergency preparedness area include more than 100 hours of inspection reviewing program controls, equipment performance, corrective actions, and drill/exercise performance.

The capabilities of the Indian Point emergency plan were successfully demonstrated during the June 2004 full-scale, integrated emergency exercise. Inspections of Indian Point emergency preparedness activities, including the reliability of the Alert and Notification System and the implementation of back-up siren power, as required by an NRC Confirmatory Order that resulted from the Energy Policy Act of 2005, are being conducted by NRC experts in emergency preparedness. In addition, the NRC will inspect the on-site response activities and DHS will review the effectiveness of off-site preparedness and response during the full-scale graded emergency exercise at Indian Point in November 2006.

The NRC continues to work closely with State and local officials to address emergency preparedness at Indian Point. For example, the NRC recently participated in an "Emergency Planning Summit" meeting with DHS, State, and local officials to discuss emergency preparedness issues around Indian Point. I believe that the meeting helped clarify the roles and responsibilities of the different levels of government and was useful in identifying the next steps to address preparedness and response. The NRC plans to work with DHS, the New York State Emergency Management Office, and local officials to improve preparedness and response further. In addition, the NRC is aware of the ongoing DHS review of the emergency operations plans in all States and in the 75 largest urban areas, including New York. This review will be completed in two phases: the first phase includes a self-assessment and certification of plan status by each State and urban area; and the second phase will involve peer-led visits to validate the self-assessments and to help State and urban area officials identify their specific requirements for Federal planning assistance. The NRC expects that the results of this review will be considered in enhancing the planning and response activities around Indian Point.

The NRC is also in the process of performing a comprehensive review of its emergency preparedness regulations to identify areas for improvement to enhance protection of the public during a radiological event and continues to keep stakeholders engaged in the review process. As part of this review, the NRC staff conducted a public meeting on August 31 - September 1, 2005, responded to over 700 comments from the meeting and the subsequent written comment period, and posted responses to these comments on the NRC website. The staff held a workshop at the March 2006 National Radiological Emergency Preparedness Conference to engage NRC's State and local partners. Most recently, the NRC staff held a public meeting on the review with advocacy groups on May 19. The NRC staff anticipates providing the results of this review to the Commission in fall 2006. DHS has been a partner in the public meetings, and the NRC is keeping DHS fully informed of our progress.

The Commission is committed to independent, thorough, and objective inspections at all of NRC-regulated facilities, including Indian Point. The Commission continues to believe that the current increased level of oversight at Indian Point is appropriate, and the scope and depth of NRC inspections and assessments, particularly the new engineering team inspection, will address your concerns. Further, the Commission believes that emergency planning at all nuclear power plants, including Indian Point, is closely monitored. We are continuing to focus on a number of reviews and initiatives to understand and address specific needs of communities around more populated sites such as Indian Point. The NRC will continue its close coordination of these activities with the Federal, State, and locally elected officials.

If you have additional questions, the NRC staff would be happy to meet with you or your staff to discuss NRC's inspection and oversight process.

Sincerely,

/RA/

Nils J. Diaz

Enclosures:
1. Indian Point Unit 2 - NRC Supplemental Inspection 05000247/2001-002, dated April 10, 2001
2. Radiological Emergency Preparedness Program - Indian Point Energy Center Response Due: May 2, 2003, dated February 21, 2003

April 10, 2001

EA No. 01-055

Mr. John Groth
Senior Vice President - Nuclear Operations
Consolidated Edison Company of
New York, Inc.
Indian Point 2 Station
Broadway and Bleakley Avenue
Buchanan, NY 10511

SUBJECT: INDIAN POINT UNIT 2 - NRC SUPPLEMENTAL INSPECTION 05000247/2001-002

Dear Mr. Groth:

The Nuclear Regulatory Commission conducted a supplemental inspection from January 16th through February 9th, 2001, at your Indian Point 2 (IP2) facility. This inspection was conducted in accordance with the guidance contained in NRC Manual Chapter 0305 and inspection procedure 95003 and was performed in response to your facility's designation as having multiple degraded cornerstones, as defined by the NRC's reactor oversight process.

The results of our inspection indicate that your facility is being operated safely. However, the team identified problems similar to those that have been previously identified at the IP2 facility, particularly in the areas of design control, human and equipment performance, problem identification and resolution, and emergency preparedness. Senior management has raised performance expectations, increased accountability and emphasis on training, and taken steps to establish improvement programs that are aligned with the station's business planning process. While some performance improvements were noted, as a result, progress has been slow overall and limited in some areas, indicating the need for you to maintain, and in some areas consider accelerating, the ongoing performance improvement program which has been in place. One such area is that of design control where recurrent problems were found in the translation of important design assumptions into plant operating procedures, drawings, calculations, and testing programs.

The inspection team assessed its findings together with the results of similar, previous inspections in order to provide insight into the overall root and contributing causes of performance issues at the site. The NRC's effort at summarizing potential causes is not intended to be a substitute for a more focused root cause study or self-assessment on your part. We found that most performance issues could be attributed to one or more of the following:

- Weaknesses in the ability to retrieve, verify, and assure the quality of engineering products, particularly design basis information.

- Inconsistent reinforcement of existing management standards with respect to staff performance, particularly in the areas of procedural quality and adherence and in implementation of the corrective action program;

- A tendency, in some instances, for the plant staff to accept degraded conditions;

- Some limitations in the application of resources leading to, for example, staffing issues and training weaknesses.

We observed that your current performance improvement plan, developed within the framework of your business plan, appears to envelope the areas needing improvement. The team determined that an alignment existed between the business plan and actions necessary to address performance issues. However, the plan is general in nature and relies heavily on department level implementation strategies that vary in quality and depth. We note previous improvement plans similarly covered the issues broadly, but were not fully effective. In that regard, you are requested to respond to this inspection report by May 7, 2001, highlighting both changes made to your business plan, based on the issues raised during this inspection, and measures you will use to monitor the effectiveness of your performance improvement efforts.

We will continue heightened oversight of Indian Point 2 until we gain confidence that your performance improvement program has substantially addressed the performance weaknesses identified in this and previous NRC inspections. This will include inspection of targeted areas of weakness, periodic site visits and public management meetings, and quarterly assessments by senior regional management. A more detailed oversight plan will be published in late May 2001, following receipt and assessment of your response.

We are planning two public meetings to discuss your performance improvement efforts. The first meeting, tentatively scheduled for April 30, 2001, will cover your response to this inspection focusing principally upon design control activities to provide confidence that appropriate actions are being taken and planned in this important area. Secondly, we are finalizing plans for an annual review meeting (as prescribed in the Agency Action Matrix), which will occur in the local area of the plant in June 2001; this will provide opportunity for broader discussion on your improvement program.

The details of our inspection findings are provided in the enclosed inspection report and were discussed with you and members of your staff throughout the inspection and at a public meeting held on March 2nd, 2001. The issues identified in the enclosed inspection report have, individually, been evaluated under the risk significance determination process as being minor in nature or having very low safety significance (Green). However, the issues provide evidence of some program and process weaknesses similar to those which contributed to previous plant events. We have determined that violations of regulatory requirements are associated with several of these issues. These violations are being treated as Non-Cited Violations, consistent with Section VI.A.1 of the NRC's Enforcement Policy. If you deny the non-cited violations, you should provide a response with the basis of your denial, within 30 days of the date of this inspection report to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk,

Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region I, 475 Allendale Road, King of Prussia, PA 19406-1415; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Indian Point 2 facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room). Should you have any questions regarding this report, please contact Mr. Brian Holian at 610-337-5128.

Sincerely,

/RA/

Hubert J. Miller
Regional Administrator

Docket No. 05000247
License No. DPR-26

Enclosure: Inspection Report 05000247/2001-002

cc w/encl:
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*** Individuals concurred via e-mail**

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	05000247
License No.:	DPR-26
Report No.:	2001-002
Licensee:	Consolidation Edison Company of New York, Inc.
Facility:	Indian Point 2 Nuclear Power Plant
Location:	Buchanan, New York 10511
Dates:	January 16, 2001 to February 9, 2001
Inspectors:	J. Shackelford, Team Leader, Region IV L. Scholl, Senior Reactor Inspector, Region I W. Schmidt, Senior Reactor Inspector, Region I J. Yerokun, Senior Reactor Inspector, Region I R. Gibbs, Senior Resident Inspector, Region II R. Pelton, Human Performance Specialist, NRR G. Morris, Reactor Inspector, Region I S. Pindale, Reactor Inspector, Region I G. Cranston, Reactor Inspector, Region I N. McNamara, Reactor Inspector, Region I G. Wertz, Resident Inspector, Region I G. McCoy, Resident Inspector, Region II D. Prevatte, Contractor O. Mazzoni, Contractor J. Kottan, Radiological Safety Program Manager, Region I (3rd on-site week) L. Peluso, Health Physicist, Region I (3rd on-site week)
Approved By:	Brian Holian, Deputy Director Division of Reactor Safety

Executive Summary

The NRC designated Indian Point 2 (IP2), owned and operated by Consolidated Edison Company of New York, Inc. (the licensee), a "multiple degraded cornerstone" facility in October 2000. As a result, a supplemental inspection was performed in accordance with the guidance in NRC manual chapter 0305 and inspection procedure 95003. A multi-disciplinary team of 14 NRC inspectors conducted the inspection over the course of approximately two months, with a total of three weeks of onsite effort. This report contains the results of that inspection. The objectives of the inspection included the following:

1) To provide the NRC additional information to be used in deciding whether the continued operation of the facility is acceptable and whether additional regulatory actions are necessary to arrest declining plant performance;
2) To provide an independent assessment of the extent of risk significant issues to aid in the determination of whether an unacceptable margin of safety exists;
3) To independently assess the adequacy of the programs and processes used by the licensee to identify, evaluate, and correct performance issues;
4) To independently evaluate the adequacy of programs and processes in the affected strategic performance areas; and,
5) To provide insight into the overall root and contributing causes of identified performance deficiencies.

The results of this inspection indicated that the licensee was operating IP2 safely, with an acceptable margin of safety, and that continued operation was acceptable. However, the team identified problems similar to those that have been previously identified at the IP2 facility, particularly in the areas of design control, human and equipment performance, problem identification and resolution, and emergency preparedness. In general, some progress has been observed in improving previously identified performance problems at the facility; however, progress has been slow overall, and limited in some areas. The team identified a number of performance weaknesses in programs and processes at the facility which indicate the need to maintain, and in some areas consider accelerating, the ongoing performance improvement program which has been in place.

The team determined that the overall program for problem identification and resolution was adequate. It was noted that some improvements had been made, in particular, an improved emphasis on problem identification and a metrics and tracking system for corrective action program issues. However, the team identified several continuing challenges to the program. It was observed that the effectiveness of some of the corrective actions for previously identified deficiencies was mixed. Additionally, the overall timeliness of corrective actions continued to be a significant challenge, and longstanding issues persisted with respect to prioritizing issues for resolution and trending causal factors. Additionally, the corrective action backlog presents an ongoing challenge to the station. Finally, as noted in previous assessments, weaknesses continue to exist in the operating experience review program, although some improvements have been made in this area. While performance difficulties continue to exist with respect to the review and disposition of technical issues, the site has made progress in areas related to industry outreach and bench-marking efforts.

Executive Summary

In the assessment of the reactor safety strategic performance area, the team selected the service water system and the 480 Vac system (including the emergency diesel generators) for in-depth reviews. These systems were selected primarily based on their overall importance to plant risk (the service water system is an important cooling water system and the 480 Vac/emergency diesel generators provide the emergency power source for the facility). Additionally, neither of these systems had received recent in-depth reviews from either the NRC or the licensee. With respect to these systems, the inspection focused heavily on the important design aspects, the quality of procedures, configuration control, and equipment performance. Additionally, the team reviewed the licensee's programs and processes associated with human performance and emergency preparedness.

It was determined that the licensee's overall performance was acceptable in the reactor safety strategic performance area. However, the team identified a number of issues in the areas of design control, equipment and human performance, and emergency preparedness which indicated weaknesses in these areas as well as the need for continued improvement.

Specifically, in the design control area, a number of performance issues were identified with respect to weaknesses in translating important design assumptions into plant operating procedures, drawings, calculations, and testing programs, including acceptance criteria. In some cases these deficiencies called into question the operability of the affected equipment. However, subsequent analyses demonstrated that the equipment would have been able to perform its safety function. The team also determined that difficulties existed in retrieving the design basis information necessary to support design control, system testing, and plant modification efforts. This particular issue had been previously identified, during NRC inspections as well as by the licensee in self-assessment efforts, and slow progress has been made to improve in this area. Additionally, this deficiency appears to have had additional impact in that some inconsistencies in the review of certain technical issues by the plant staff were observed.

In the area of equipment performance, the team determined that the reliability, material condition, and overall performance was acceptable for the reviewed systems. However, a number of other equipment issues presented challenges to both the plant and the operators. For example, emergent equipment failures in secondary plant systems continue to challenge the plant operators and have required numerous plant power changes. Examples included the feedwater pump oscillations during the recent plant startup, the heater drain pump flow element leak, and the feedwater system leak. In addition, the team noted that there had been some history of failures associated with the service water system strainers and boundary valves. The team also noted that a decrease in reliability and a concurrent increase in unavailability of the gas turbine generators occurred in the final quarter of 2000. This appears to be partly attributable to a decrease in the emphasis on maintenance for this equipment. Finally, the team concluded that the station work backlog continued to pose a significant challenge to the plant. It was also determined that due to oversights, a number of important work items had not been accurately captured in the accounting for the backlog, indicating that it may have been even somewhat larger than stated. Examples of this included the procedure changes required by the "communications to staff" program and the issues associated with verifying the comprehensiveness of the testing of various instrumentation and control components.

In the area of human performance, the team noted an increased emphasis on overall improvement and a recognition of the need for an improved training program. However, a

number of program and process issues were identified. In particular, a challenge existed with respect to the number of licensed operators. This issue presented difficulties with respect to overall scheduling as well as overtime considerations. During the course of the inspection, the team witnessed a number of both planned and unplanned deviations from the overtime policy. However, the team also noted that licensee management recognized this problem and took steps to increase the number of licensed operators at the site.

The team also observed that operator performance issues have contributed to previous events and that some performance problems continue to occur. Performance errors were observed in the August 1999 reactor trip, the February 2000 steam generator tube failure, and again recently in the January 2001 turbine trip. Additionally, inconsistencies continued to exist with respect to procedural quality and adherence. Examples were also observed whereby the control room staff was unnecessarily challenged with maintenance planning efforts (in the control room) rather than having these same planning activities conducted by the work control organization outside the control room. However, the team did observe that overall crew performance was acceptable, and in particular, crew communications were good, indicating that some improvements had been made in this area.

In the area of emergency preparedness, the team determined that the overall program was adequate and provided reasonable assurance that the emergency response organization could respond effectively to an emergency. Additionally, while issues were identified that indicated the need for continued improvement, improvements were noted in a number of areas where performance issues had been previously identified. Notwithstanding, the team observed that the remediation for some of the previously identified performance issues in the technical support center, emergency operations facility, and joint news center had not been fully effective. Examples included weaknesses in technical support center assessment activities and communication, and information dissemination and coordination activities in the emergency operations facility and the joint news center. The team acknowledged that while some corrective actions had been taken in these areas, the training program had not been fully effective in preventing the recurrence of these issues. The team also found minor examples of performance issues associated with implementation of the emergency plan and the associated implementing procedures.

The team integrated these supplemental inspection findings and the results of previous similar efforts to develop the overall root and contributing causes to performance issues at the site. However, this effort was not intended to be a substitute for a more focused root cause study or self-assessment on your part.

The team determined that weaknesses existed with:

- The ability to retrieve, verify, and assure the quality of engineering products, particularly design basis information. These weaknesses contributed to problems in developing and validating calculations, testing methodologies, and acceptance criteria.

- An inconsistent reinforcement of existing management standards with respect to staff performance, particularly in the areas of procedural quality and adherence and in implementation of the corrective action programs. The team concluded that although adequate standards existed, inconsistent application of these standards appeared to cause performance issues to continue in those areas.

- A tendency, in some instances, for the plant staff to accept degraded conditions. This was true for both equipment issues and the quality of technical information. However, the team concluded that improvement has been made in this area.

- Some limitations in the application of resources which led to, for example, staffing issues and training weaknesses.

The team noted that station management identified similar root causes. Further, the team determined that, while a number of program and process issues existed at Indian Point 2 (some of a longstanding nature), some improvements have been made. While progress has been somewhat slow overall and limited in some areas, the business plan appeared to envelope the major performance issues which have been identified, and if executed properly, should result in continued station performance improvements. Previous site improvement plans had shown similar promise, but were not fully effective in improving overall plant performance. The NRC will continue heightened oversight of Indian Point 2 until we gain confidence that the performance improvement program has substantially addressed the performance weaknesses identified in this and previous NRC inspections.

SUMMARY OF FINDINGS

IR 05000247-01-02, on 01/16 - 02/09/2001; Consolidated Edison; Indian Point 2 Nuclear Power Plant. Supplemental Inspection, Multiple Degraded Cornerstones - 95003, Problem Identification and Resolution, Human Performance, Safety Systems, Chemistry, Emergency Preparedness.

The inspection was conducted by Region I, Region II, Region IV regional and resident inspectors and NRC Headquarters and contract personnel. The significance of issues is indicated by their color (green, white, yellow and red) and was determined by the Significance Determination Process (SDP). This inspection identified all green issues.

Cornerstone: Mitigating Systems

The team identified the following issues concerning design control. The four individual findings are being treated as a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." (NCV 2001-002-002)

Green. The design temperature ratings of electrical components in the emergency diesel generator (EDG) building, including ventilation fan thermal overloads, cabling, and control power transfer switches had not been verified. These issues were of very low significance because the as-found thermal overload settings would not have resulted in the loss of ventilation at the maximum building temperatures, the effects of elevated temperature on the cabling voltage drop calculation would have been negligible, and information obtained from the vendor indicated that the control power transfer switch circuitry would have remained functional at the elevated temperature. (Section 2.A.1.b.1)

Green. The results of the EDG loading calculation had not been transmitted to the operations department for inclusion into appropriate operating and test procedures. These issues were of very low safety significance since the ability of the EDGs to provide emergency power was not affected and the procedure issues would not have impacted safe operation of the affected systems. (Section 2.A.1.b.1)

Green. The ability of the service water system to supply adequate flow to all safety-related components based on existing service water low header pressure alarm setpoint and the control room log limits was not supported by engineering calculations. The licensee performed a preliminary analysis and determined that the alarm setpoint of 53 psig was adequate to ensure adequate flows. However, if pressure decreased to the control room log limit of 48 psig the system would not have had sufficient capacity to supply adequate flow to all components. The licensee increased the control room log limit to 58 psig, giving a 5 psig margin to the 53 psig low pressure alarm design limit. This issue was of very low safety significance because there was no indication that the service water system had been operated below a header pressure of 53 psig. (Section 2.A.2.b.3)

Summary Of Findings

Green. Controls were not in place to prevent damage to components in the service water strainer room given an external flood caused by high river water level and a concurrent internal flood due to a potential single failure of a service water pump vacuum breaker valve. The licensee implemented a temporary procedure change to address this issue. This issue was of very low safety significance because it involved the relatively low probability of an internal flooding event coupled with the low probability of an external flooding event. (Section 2.A.2.b.3)

The team identified the following issues concerning the quality and use of procedures. The four individual findings are being treated as a non-cited violation of procedures required by Technical Specification 6.8.1 (NCV 2001-002-003).

Green. Abnormal Operating Instruction (AOI) 27.3.1, "Emergency Fuel Oil Transfer Using the Trailer," Rev. 0, did not provide adequate instructions for filling the trailer. This issue was of very low safety significance because the use of this procedure has never been required and would require minor changes to resolve the discrepancies. (Section 2.A.2.b.1)

Green. Addendum VI to SAO 100, "Indian Point Station Procedure Policy," Rev. 3, which describes the process for implementing temporary procedure changes (TPCs), was not followed when alarm response procedure ARP AS-1 (Accident Assessment Panel 1; windows 5-4 and 6-4) was changed with TPC 00-0853. This TPC was implemented because a temporary modification disabled the associated alarm inputs; however, the alarm inputs had already been disabled and the change was not required for immediate operation of the plant. This issue was of very low safety significance because the use of a TPC did not have any actual detrimental affect on plant operations. (Section 2.A.2.b.1)

Green. The reactor coolant loop Delta-Temperature alarm was received during power ascension as a result of having an incorrect setpoint value in calibration procedure. This issue was determined to be of very low safety significance since the instrument does not have any automatic protective function, only an alarm function. (Section 2.A.4.b.1)

Green. Leaving two oil absorbent pads inside the EDG 21 instrumentation cabinet following repairs to a leak did not comply with SAO-701, "Control of Combustibles and Transient Fire Load," Rev. 8. This issue was of very low safety significance because it did not represent a fire impairment nor a degradation of a fire protection feature or defense in depth issue. (Section 2.A.4.b.1)

The team identified the following other findings concerning design, testing, and maintenance rule issues.

Summary Of Findings

Green. Design bases information was not translated into electrical systems testing and operating procedures acceptance criteria or operating limits. This issue was of very low safety significance because none of the test results or operating data reviews identified instances where equipment was operating outside of its design limits. This failure to include appropriate acceptance in the procedures and drawings to ensure activities have been satisfactorily accomplished is being treated as a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." (NCV 2001-002-004) (Section 2.A.2.b.2)

Green. The plant testing program did not include a verification that the safety-related service water strainer room drain line check valve, MD-500, could open to prevent internal strainer pit flooding. The licensee demonstrated operability by manually cycling the valve from the full open to full closed position and observing that the valve opened with minimal effort and that there was no restriction in movement. . This failure to test a valve by periodically exercising it to its safety function position is being treated as a non-cited violation of 10 CFR 50.55a, "Codes and Standards," paragraph (f), "Inservice Testing Requirements." (Section 2.A.2.b.3) (NCV 2001-002-005)

Green. Corrective actions were not taken to resolve reliability and availability performance issues with the alternate AC power sources, gas turbines (GTs) -1, -2 and -3. The GTs had not been meeting the licensee developed maintenance rule reliability and availability performance goals since 1995. The team did an independent calculation of the change in core damage probability associated with the unavailability of GT-2 for an estimated repair length of 60 days and determined that the risk increase to be within the very low safety significance band (<1E-6). This issue was of very low safety significance because the Technical Specifications relative to GT availability were met. This failure to effectively implement corrective actions to ensure that the established maintenance rule goals would be met is being treated as a non-cited violation of 10 CFR 50.65 (a)(1). (Section 2.A.3.b.1) (NCV 2001-002-006)

Cornerstone: Emergency Preparedness

Green. The team found that the Emergency Response Data System (ERDS) was found inoperable during an exercise in November 2000 and again during a test conducted in the 1st quarter 2001. The NRC conducted an ERDS test during this inspection and found both the system and it's backup to be operable. This issue was determined to be of very low safety significance because the licensee retained capability to communicate via the telephone system. The failure to correct a deficiency identified during a drill/exercise is being treated as a non-cited violation of 10 CFR 50.47(b)(14). (Section 2.D.1.b) (NCV 2001-002-007)

Summary Of Findings

Green. The licensee could not locate Emergency Operations Facility inventory records for the third quarter 2000 nor verify those inventories were actually conducted and a review of available quarterly inventory records identified cases where the records were not properly filled out. This issue was determined to be of very low safety significance because notwithstanding the discrepancies which were identified, the licensee had sufficient resources in the facilities to properly respond to an event. The failure to properly maintain emergency facilities and equipment is being treated as a non-cited violation of 10 CFR 50.47(b)(8) and the licensee's E-Plan, Section 8.3 which states quarterly inventories will be conducted. (Section 2.D.4.b) (NCV 2001-002-008)

Green. The licensee was not able to produce the 3rd quarter records for the operational check of the emergency communications links between facilities and could not verify that the tests had been conducted. This issue was determined to be of very low safety significance because the licensee had installed spare operable telephone lines. The failure to conduct and/or document the performance of quarterly communications tests is being treated as a non-cited violation of 10 CFR 50.54(q) and Section 8.1.3 of the licensee's E-Plan. (Section 2.D.4.b) (NCV 2001-002-009)

Green. The team found that ten individuals assigned to the offsite and onsite monitoring teams had let their respirator qualifications lapse. This issue was determined to be of very low safety significance because there were sufficient responders with respiratory qualifications to fill the positions. The failure to maintain qualifications necessary to maintain proficiency as an emergency responder is being treated as a non-cited violation of 10 CFR 50.54(q) and Section 8.1.2 of the licensee's E-Plan. (Section 2.D.5.b) (NCV 2001-002-010)

Green. The licensee continued to identify exercise deficiencies that are repetitive performance issues and are reflective of past performances, particularly in the area of plant assessment and the dissemination of the information to the general public. The team determined that the training program was not fully effective in preventing recurrence of repetitive exercise issues to ensure consistent emergency response organization performance. This issue was determined to be of very low safety significance because these performance issues did not deal with the risk significant planning standards (classifications, notifications, PARs). The failure to establish an effective training program to train employees and exercising, by periodic drills to ensure that employees maintain the proficiency of their specific emergency response duties, is being treated as a non-cited violation of 10 CFR Part 50.54(q) and Appendix E.IV.F.2.g. (Section 2.D.5.b) (NCV 2001-002-011)

Summary Of Findings

Cross-Cutting Issues: Problem Identification and Resolution

The team identified the following findings which are being treated as a non-cited violation of 10 CFR 50, Appendix B, Criteria XVI, "Corrective Action." (NCV 2001-002-001)

Green. The licensee failed to identify and correct the cause of repetitive failures of the service water strainers and motor operated service water isolation valve SWN-7. These items were determined to be of very low safety significance because the strainer failures did not have more than a minimal impact on system operability and the valve failures were identified when the valve was out of service for maintenance. (Section 1.A.b)

Green. The licensee failed to initiate condition reports for three failures to meet the acceptance criteria for service water strainer blowdown flow rates during the performance of procedure PT-93 on July 13, 2000. This issue was determined to be of very low safety significance because the operability of the system was not affected. (Section 1.A.b)

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Report Details

1. Review of Licensee Control Systems for Identifying, Assessing, and Correcting Performance Deficiencies

The team evaluated the ability of Consolidated Edison of New York (the licensee) to identify, assess, and correct performance problems within the corrective actions program. The evaluation focused on the programmatic performance of the condition reporting system and on the identification and resolution of plant performance issues.

A. Significant Deficiencies Review

a. Inspection Scope

The team conducted a review of the licensee's condition reporting system and related programs focusing on evaluating the ability to identify, assess, and effectively correct performance deficiencies. The review focused primarily on evaluations and assessments associated with program performance issues and organizational deficiencies. Additionally, the team reviewed licensee actions taken to address identified program performance issues (e.g., the effectiveness reviews conducted for the August 1999 loss of offsite power and reactor trip event). The team reviewed performance aspects associated with the January 2, 2001, turbine trip and other important issues associated with the plant systems and processes described in section 2 of this report.

b. Findings

Program Issues

In most cases, the team found that the licensee's condition reporting system was effective in identifying program performance issues and organizational deficiencies and that the individual site department business plans included the long term corrective actions for the identified performance issues within their respective organizations.

The overall ability to easily access and use the condition reporting system had been previously identified as a performance issue, and the team observed that this problem continued to challenge the plant staff. The quality assurance (QA) organization had attributed the usage problems to inadequate training and an overall lack of familiarity.[1] To address this issue, approximately one-half of the plant employees received training on the system during 2000. However, the team concluded that implementation of this corrective action was slow, because a previous condition report (CR) [2] had been initiated to document this same knowledge weakness in November 1999.

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[1]These conclusions were documented in condition report (CR) 200000994.

[2] CR 199908802

Additionally, the team observed that the condition reporting system exhibited several computer based weaknesses. As examples, on several occasions during the inspection, the system was unavailable due to plant computer problems and the program made it difficult to track the status of corrective actions. The licensee had recognized these deficiencies and included an initiative in the 2001 business plan to purchase new condition reporting system software.

Line management ownership of the corrective action program had also been previously identified as an important performance issue and the team found that challenges continued to exist in this area. The team noted that the licensee had implemented measures to improve accountability (i.e., an improved metrics report, condition report quality reviews, and quarterly departmental reviews) but more improvement was needed to assist in managing and reducing the backlog and provide more effective condition report responses. Line management ownership of the program was expected to become even more important because the proposed revision 4 (Rev. 4) to the corrective action program procedure[3] would result in a significant increase in the backlog since individual items would not be closed until their associated work orders were completed. The team noted that the 2001 business plan addressed insufficient line management ownership as one of the most significant contributing causes for corrective action program problems.

The licensee's ability to trend condition reporting causal factors continued to be a challenge. This item had been identified by the NRC as an issue in 1998, and more recently in the 2000 problem identification and resolution inspection. To address this longstanding issue, the corrective action group had recently begun assigning causal factors to condition reports because prior efforts by the line organizations to perform this function had not been successful. The licensee indicated that the complicated nature of the condition reporting system software and unfamiliarity of the program by the plant staff were the primary reasons for this continuing deficiency. The licensee had initiated measures to address this issue by evaluating a less complicated software and assigning a specific individual for assigning causal factors. Additionally, plans to improve this deficiency were included in the licensee's 2001 business plan. The team determined that the inability to trend causal factors was a weakness of a longstanding nature and one for which there had been little measurable progress.

The licensee continued to face challenges in the area of condition report response effectiveness. The licensee had initiated a number of condition reports (as a result of audits and self-assessments in this area) which pointed out various problems related to this issue. For example, CR 200003865 identified that the extent-of-condition assessments were better developed for significance level (SL) 3 CRs when compared to the more significant SL1 and SL2 CRs.[4] Additionally, with respect to the quality and effectiveness of corrective actions, several deficiencies were identified. For example, CR 200004854 identified that several SL2 CRs did not meet management expectations for quality, primarily due to insufficient line management ownership for corrective action

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[3] Station Administrative Order (SAO)-112 Corrective Action Program, Rev. 4

[4] The licensee's system assigned a significance level to each CR, with SL3 having the lowest significance and SL1 having the highest.

evaluations. As a result, the licensee required that all SL2 CRs receive a quality review by the Corrective Action Review Board (CARB). However, the team observed that the CARB's review of at least one SL1 CR was of mixed quality. Specifically, one CARB member was not fully aware of all the key elements to be considered during the review. Another member expressed concern that if the board assigned lower quality scores, then that would require the SL1 report to be revised. The team was concerned that this attitude indicated a potential hesitancy to score CR quality responses low to avoid required revisions. Additionally, the quality review process observed by the team was informal and lacked critical assessment on some issues.

The team noted that the licensee's effectiveness reviews continued to indicate difficulties with the corrective actions taken to address problems identified following the August 1999 loss of offsite power and reactor trip event. The licensee used outside contractors to conduct several independent assessments such as a review of common cause trends in the condition reporting system, a review of the closure of condition reports, and a review of corrective action effectiveness for actions taken following the event. These reviews were self-critical and provided valuable information with respect to improving plant performance. However, these reviews also identified areas where previous corrective actions have not been fully effective.

Implementation Issues

In the review of the implementation of the corrective action program, the team identified a number of issues related to weaknesses in implementing effective corrective actions and in identifying repetitive failures of certain plant components. Additionally, several examples were identified where condition reports were not promptly initiated for plant and equipment deficiencies.

For example, the team discovered instances of repeated equipment failures that were not identified in the condition reporting system. While the issues were individually raised in separate condition reports that were subsequently closed to work orders, the repetitive nature of the failures were not questioned relative to the adequacy of previous corrective actions. Examples included:

- Repetitive service water strainer failures were identified through the review of maintenance activities performed since early 1998. The strainers had failures caused by issues such as: tripping overloads, binding, and a damaged arm shaft.[5] As part of an effort to address the unavailability caused by the failures in December 1998, the licensee added a preventive maintenance work scope that involved a periodic overhaul or replacement of a strainer with a rebuilt internals package every six months. However, additional failures subsequently occurred, caused by issues such as binding, tripping, and high differential pressure. There was no indication that the problems were being pursued as repetitive failures to

[5] CRs 199905026, 199902815 and 199902586, respectively

ascertain their root causes or to perform broader corrective actions to preclude repetition. This issue was determined to be of very low significance (Green) because each failure had a minimal impact on system operability.

- Repeated failures of service water valve 7 (SWN-7) were identified during a review of condition reports. SWN-7 is the isolation valve for the service water supply to turbine building loads and provides a barrier between the essential and non-essential loads. CR 200002700, written in April 2000, identified that the sector gear on the operator for SWN-7 required replacement and was closed out to a work order to complete the repair. On May 1, 2000, CR 200003085 was written to clarify that this was the second failure of this valve due to a damaged sector gear. This CR also noted that the worm gear on the valve operator was damaged, and had not been repaired even though the licensee attempted to return the valve to service. Although this worm gear had been determined to be damaged, the condition report identified that a new worm gear was on order and as of May 2000 had not been received. The team questioned why post maintenance testing had been attempted on the valve while it still contained damaged components and why this issue had not been raised by any of the condition reports in the system. After reviewing the condition reports and work orders involved with this issue, the licensee agreed that the condition reports had been inappropriately closed without an engineering evaluation to address the repetitive failure. This issue was determined to be of very low significance (Green) because the deficiency had been discovered when the valve was out of service for preventive maintenance and had not been returned to service.

Contrary to 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," the licensee failed to take adequate measures to properly identify and correct several instances of repeated failures and degradation of the service water strainers and valve SWN-7. As a result the licensee failed to determine the root causes and to take appropriate corrective action to preclude repetition of these issues. This violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy, issued May 1, 2000 (65FR25368). The two specific issues were entered into the corrective action program as CRs 200101388 and 200101125 **(NCV 05000247/2001-002-001)**.

The team also identified several examples where the licensee failed to promptly issue a CR upon the discovery of an adverse condition or deficiency. For example, during the performance of PT-R93, "Essential Service Water Header Flow Balance," in July 2000, the team identified three cases where the as-found service water strainer blowdown flows exceeded the 215-235 gpm acceptance criterion, and no condition report had been generated as required by the corrective action program.[6] The affected strainers were: pump 21 strainer (277 gpm as-found flow), pump 23 strainer (305 gpm as-found flow), and pump 26 strainer (254 gpm as-found flow). It was also noted that the procedure required blowdown flows to be adjusted to within the acceptable range prior to obtaining

[6] SAO-112, Rev. 3

the as-found flows for the remaining components. Even though the remaining components' as-found flows might be acceptable, this premature adjustment of blowdown flows had the potential to mask unacceptable flows to the other loads.

It was estimated that, before the adjustments, flow to the other loads were approximately 1.15% lower than recorded. This would have resulted in only one of the other components, a containment fan cooler unit, to have flows less than its acceptance criterion. The fan cooler's flow would have been 10 gpm below the 1,740 gpm acceptance criterion. However, since the actual required flow for operability was 1,600 gpm, it would have still been able to perform its safety function.

The licensee failed to generate CRs for three failures to meet the acceptance criteria for service water strainer blowdown rates in procedure PT-R93 on July 13, 2000. This issue was determined to be of very low significance (Green) because the operability of the system was not affected. This issue is considered an additional example of the non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions." This issue was entered into the corrective action program as CR 200100568 **(NCV 05000247/2001-002-001)**.

The team identified other examples, of a more minor nature, of the failure to initiate required CRs. Although, each of these issues warranted correction, none presented an operability concern and were therefore considered to be minor violations of regulatory requirements, not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. Representative examples included:

- The licensee failed to initiate condition reports for instrumentation and control preventive maintenance procedures 1775-1 and 1778-1 when the alarms could not be verified (as required by the procedure) due to tagout 98-10993 which removed dc control power. Also, the licensee was slow to initiate condition reports after the team identified this on January 18, 2001. CRs 200101467 and 200101468 were written, but not until February 8, 2001.

- During the walkdown of the service water pump intake bay, the team identified several issues that did not meet foreign material exclusion requirements. The conditions involved: (1) the presence of spalling concrete, (2) peeling epoxy coating on SW piping, (3) a 3/4 inch carbon steel nut in the service water strainer pit drain valve MD-501, and (4) degraded valve assembly nuts on the drain valve. The spalling condition had been previously identified in CR 199808290, but there was little evidence of any meaningful corrective action beyond installing a tarp in the area. Following the team's identification of these issues, the licensee generated CRs 200101433, 200101464, and 200101431 to address these conditions.

- During a walkdown of the service water system, the team noted several conditions that demonstrated a lack of attention to detail by maintenance personnel. Specifically, instances of the use of fasteners fabricated from dissimilar materials, inconsistent use of washers in bolted arrangements,

improper nut thread engagement, and physical differences between the fasteners used on similar equipment. The licensee issued CRs 200100565, 200100560, and 200100510 to address these issues.

- During a review of the Temporary Facility Change (TFC) process, the team noted that the licensee failed to conduct the quarterly review of TFCs for the fourth quarter of 2000 as required by station procedures.[7] The purpose of this review is for the Generation Support Manager to determine the compliance of each individual change with respect to the procedure requirements and to determine whether individual open TFCs should remain in effect. The team considered this to be a minor violation of administrative controls. The licensee initiated CR 200101456 to address this issue.

- During the review of the 480 Vac Design Basis Document (DBD), the team found that only 2 of 101 open items had been entered into the corrective action program for resolution. The remaining 99 open items contained conditions such as missing or unapproved calculations and specifications. In response, the licensee grouped the 99 items into 13 general categories and generated a separate condition report for each category.

Additionally, the team identified a weakness in documentation and in initial efforts to establish root and contributing causes of the January 2, 2001, turbine trip. In CR 200100048 the licensee indicated that a contributing cause for the event was an off-normal system line-up leading to the operator having to start a second condensate pump to address a lower that normal feed pump suction pressure. Additionally, the report described untimely actions by a reactor operator which caused overfeeding of the steam generators and an associated steam generator high level turbine trip. However, in the resolution of the CR, there were no specific corrective actions to address the root and the contributing causes. The licensee noted in the interim action section of the report, that the operations manager was completing crew briefings on the event and that procedures were to be changed. However, the CR did not address any potential operator knowledge deficiencies in the operation of the condensate and feed system. After significant interaction with NRC staff, ConEd ultimately developed a reasonably comprehensive assessment of the event and took additional corrective actions.

B. Quality Assurance, External Audits, and Self-Assessments Review

a. Inspection Scope

The team reviewed selected audits and assessments performed by the line organizations, the quality assurance group, and external sources to determine whether the licensee had demonstrated the capability to identify performance issues before they resulted in undesired consequences. The team evaluated management support of these assessments and also evaluated the effectiveness of management systems to process and act upon identified performance issues.

[7] SAO-206, "Temporary Facility Changes," Rev. 20, section 6.1

b. Findings

In general, the audits and self-assessments reviewed by the team were well conducted and provided sufficient detail and recommendations for improvement. Also, the corrective actions taken were generally effective. The condition reporting system was used to identify and track the closure of issues from the audits and self-assessments. Some examples of effective self-assessment activities included the following:

- Audit 00-09-C, "Corrective Action - 1st Half 2000," dated September 28, 2000, was thorough and self-critical in identifying areas of needed corrective action program improvements. These improvements included a revision to the program procedure, enhanced metrics for timeliness and quality of condition report responses, and improved training for new employees. The team reviewed the condition reports for the significant audit findings and determined that the licensee's response to the performance deficiencies was acceptable. The team noted that continued efforts for further improvements in these areas was also included in the corrective action program 2001 business plan.

- The team reviewed several audits and condition reports associated with plant procedures. In particular, Quality Assurance Audits 98-08-L (January 5, 1999) and 00-08-A, (February 2001) assessed station instructions, procedures and drawing control. The team determined that the audits and associated condition reports were of good quality and provided the proper emphasis on station improvement.

- The system engineering self-assessment on engineering work control interface completed in February 1999 identified weaknesses.[8] The team reviewed the completed corrective actions for these condition reports and interviewed several system engineers and work week managers with respect to the findings. The team determined that the corrective actions were adequate.

Notwithstanding these positive observations, the team identified a number of performance weaknesses in the self-assessment program. The following examples are representative:

- The quality assurance (QA) department self-assessment of the audit program dated March 6, 1999, contained no substantive assessment of QA's ability to evaluate plant problems and effectively communicate those problems to plant management. The purpose of the assessment was to evaluate the audit program against industry practices and identify areas for improvement. However, the assessment primarily focused on elements such as training, staffing, audit report detail, procedures, and office space.

[8] CR 199902791 and CR 199902792

- QA's 2000 self-assessment dated September 14, 2000, concluded that the organization's program elements were not adequate for effectively promoting performance-based continuous improvement. The assessment identified that plant risk assessment data needed to be more effectively used in the audit process. The assessment also identified that individual auditor training plans needed to be developed to provide better technical skills. These were good findings. However, the training matrix developed to address the assessment's findings did not include plant risk training. The team considered that not including risk training in the matrix was a weakness with respect to the ability to integrate priority assessment results into effective corrective actions. The team noted that continued efforts for further improvements were included in the 2001 business plan.

- The primary purpose of the engineering third party self-assessment issued on August 14, 2000, was to review the quality of engineering output documents. However, the assessment did not document any reviews of actual engineering calculations or other output documents. The team also reviewed another assessment,[9] and found it had covered numerous engineering work product areas. The discussions provided appeared to be self-critical and constructive and represented meaningful assessments.

- It was recognized in the February 2001 audit of "Plant Operations and Operations Performance, Training, and Qualification," that the corrective actions associated with a similar audit in January 1999 had not been fully effective. Specifically, several issues associated with procedure quality and adherence were identified, but the subsequent effectiveness review concluded that the station still had problems with procedural compliance and accountability. As a result of this issue, the licensee issued CR 200005446.

C. Work Authorization and Allocation of Resources Process

a. Inspection Scope

The team reviewed the corrective action and maintenance backlogs for the systems selected for detailed review to assess the extent of the backlog and determine if there was open work which would prevent the systems from performing their safety functions and reviewed the prioritization and timeliness of corrective action program items. For the systems selected for review by the team, there were a total of approximately 40 open requests for engineering services and modifications.

[9] IP2 Engineering Document Quality Review, January 5, 2001

b. Findings

Backlog Review

The team found that the overall backlog of open CRs and work orders had increased, however there had been some improvement in the timeliness of completing condition report evaluations.

The total number of open corrective maintenance work orders for all plant systems was reported by the licensee to be approximately 875 at the end of the inspection and had gradually increased over the past several months. The number of temporary facility changes and control room deficiencies had trended upward and continued to exceed the plant goals. A recent reduction in the number of operator work-arounds had been achieved but the number had also continued to exceed the plant goal.

With respect to the maintenance backlog in the service water, 480 Vac, and emergency diesel generator (EDG) systems the team did not identify any open issues that appeared to challenge the functionality of the system. There were no overdue preventive maintenance work orders for the service water system. However, six were overdue for the 480 Vac and emergency diesel generator systems; none appeared to have a potential effect on equipment operability.

The team also noted that some open work items had not been accurately captured in the accounting for the backlog. Examples of this included approximately 99 open items from the recently completed design basis review of the 480 Vac system, a significant number of issues related to the instrumentation and control preventive maintenance program, and a large number of procedure changes associated with the "communications to staff" program. These observations indicated that the actual plant work backlog was somewhat larger than previously believed.

The team observed that the licensee continued to face challenges with respect to the use of plant risk information for condition report and corrective action prioritization. This had been identified in the recent NRC problem identification and resolution inspection, as well as in other previous NRC inspections and licensee self-assessments. The team concluded that this was another example of a longstanding weakness in the corrective action program and one for which limited progress had been achieved.

Finally, the team observed that the licensee's average time to close corrective actions was significantly outside station goals. The average as of the January 2001 data was approximately 256 days (i.e., time from identification to problem correction). The station goal for this metric, which was based on industry bench marking data, was in the 90 - 180 day range. It was noted that the configuration management and controls backlog appeared to the leading contributor to driving the average in the upward direction with a 560 day closure time as of the January 2001 data.

D. Review of Station Performance Goals and Strategic Plans

a. Inspection Scope

The team evaluated the licensee's performance goals to assess whether these goals and associated strategic plans were aligned with the actions needed to correct the known performance issues at Indian Point 2. The team conducted numerous management and plant staff interviews and specifically reviewed the departmental business plans for the following organizations: corrective action program, configuration management, work management, emergency planning, operator training, engineering, operations, and maintenance.

b. Findings

Performance Goals

The team reviewed the 2001 business plan for the site organizations as noted above. It was determined that the business planning process had adequately provided for the integration of efforts and provided an appropriate allowance for resources and associated funding. However, it was also noted that the details provided in the individual department plans varied significantly. Several of the plans lacked proposed completion dates for certain items and others were somewhat general in the description of areas of needed improvement. Some representative examples of individual department business plan observations are listed below.

- Several weakness in the documentation associated with the configuration management and control business plan were noted. For example, several business plan items associated with Technical Specification setpoint calculation issues contained question marks as place holders. Additionally, items related to staff training in the updated final safety analysis report, licensing basis and design basis documents contained provisions for funding, yet did not contain justification or support for station organizational goals. A similar example existed with a business plan goal associated with "Operating Equipment Staff Augmentation." The business plan listed the next seven design basis documents to be updated in the continuing design basis document upgrade project. The team noted that two of the systems, main steam and the emergency diesel generators were scheduled to have been started on October 1, 2000, but no current status appeared in the plan. Interviews with plant staff indicated that the projects had not yet been started.

- The maintenance department business plan was detailed and comprehensive. Major improvement areas were identified and included the maintenance backlog reduction plan, the work control process improvement plan, and instrumentation and control preventive maintenance program upgrade plan. The team noted that, with a few minor exceptions, the plan identified managers responsible for required actions, along with expected completion dates.

- The corrective actions program business plan was not fully developed and none of the plan's initiatives had schedule dates for completion. Additionally, the plan did not specifically address the resources required to complete the planned

initiatives. The team also noted instances whereby items were closed prematurely. However, the team noted that even though the approved plan was not fully developed, the plan's major elements appeared to address needed improvement areas such as human error reduction, operating experience, trending, and line management ownership for corrective actions.

- The operations training business plan contained proposed budgets, staffing, and schedules for completing major department initiatives. Additionally, it was noted that effectiveness reviews of major actions taken were scheduled for later in 2001. The plan contained initiatives associated with major areas of operator knowledge weaknesses and referenced performance improvement programs established to improve the skills, knowledge, and abilities of licensed operators.

- The design and site engineering business plans included appropriate areas for improving engineering processes, design bases documentation, and equipment reliability. Backlog reduction efforts were also included in the plans. However, specific project details and schedules were not included within the business plans.

Management Interviews

The team conducted extensive interviews of licensee managers throughout the organization including the chief nuclear officer, site vice presidents, and many department managers. The management consensus was that the current plant performance problems started as experienced staff began to leave site in the early 1990s. This, combined with a lack of infrastructure improvements, and a successful extended plant run in 1996 led to an organization that lost a significant portion of its knowledge base, did not seek out external perspectives, and did not recognize the need for continued improvement due to demonstrated high capacity generation.

The team concluded that the station management was in general agreement with respect to the performance problems which existed at the site and in the areas requiring improvement. Additionally, the station management was in almost unanimous agreement in the belief that the 2000 business plan was a success and had allowed for focus on areas for improvement and in planning for and obtaining needed resources to complete the required tasks. The managers also believed that the 2001 business plan provided an adequate scope and method of documenting needed areas of future improvement along with the resources to accomplish the activities. Several managers indicated that the use of an approved, resource-loaded business plan was the first time that the organization had such a detailed plan for which they had been held accountable.

E. Employee Concerns Program Review

a. Inspection Scope

The team performed a review of the licensee's employee concerns program (ECP), also known as the Ombudsman Program. This review focused on the adequacy and responsiveness to employee concerns and included an assessment as to whether a safety conscious work environment existed at the facility. The team interviewed numerous personnel at various levels of the organization and reviewed the program files and documentation associated with the program. The team also reviewed a self-assessment of the Ombudsman Program to evaluate whether appropriate action was taken for deficiencies which had been identified.

b. Findings

The team noted that the ECP appeared to provide an acceptable means for employees to raise safety concerns to management without fear of retaliation. In addition, the licensee's condition reporting system allowed employees to raise safety issues anonymously and was viewed as an alternate process to the ECP. The team did note that the number of anonymous CRs initiated could be an indication that some employees were reluctant to identify themselves with concerns raised. In most cases, the team found the licensee's response to employee concerns was acceptable and interviews with site employees indicated that a safety conscious work environment existed at the facility.

Notwithstanding the overall adequacy of the program, the team identified several minor deficiencies. It was determined that the ECP procedure, SAO-123, "Employee Concerns Program," Rev. 10, lacked specificity with respect to several important program elements. These elements included (1) how employees access the ECP, (2) methods for employees to report safety concerns, (3) program assurance of maintaining employee confidentiality, and (4) measures to protect employees against retaliation. The team reviewed other aspects of the program such as general employee training information, bulletin board information about the program, and posted information at drop boxes where employees submit concerns. As a result of this finding, the responsible manager, otherwise known as the Ombudsman, initiated CR 200100619 to correct the deficiency. The team determined that, even though the governing procedure lacked the desired specificity, sufficient information regarding these program elements were included in the program.

The team reviewed the 2001 business plan for the ECP and found that it provided the expected degree of specificity for program improvements. In particular, the team noted that more detailed training for managers and other plant personnel was scheduled for 2001. Also, the plan included initiatives for updating the program procedure, preparations for the annual self-assessment, documentation improvements, and program improvements for the classification and tracking of concerns.

F. Operating Experience Review Program

a. Inspection Scope

The team conducted a review of the operating experience review program to determine if appropriate actions were taken to address potential plant problems identified as a result of industry operating experience. The team reviewed the licensee's governing operating experience review procedure, program assessments, and backlog of open items. Interviews were conducted with program personnel as well as the line organizations. The team also reviewed selected 10 CFR Part 21 reports and NRC Information Notices from 1998 thru 2000 to determine if the program had adequately assessed the issues for applicability at the site.

b. Findings

Previous NRC inspection efforts as well as licensee assessments had identified weaknesses in the licensee's operating experience review program. The team determined that while some limited progress had been made, primarily in the area of industry bench marking and outreach efforts, that weaknesses continued to exist in the program. The team observed that some progress had been made by the advent of enhanced electronic access and by increased resource allocation. However, the overall implementation of the program, particularly by the line organizations, continued to be a problem. Additionally, the team determined that while there had been progress in the reduction of the backlog associated with operating experience items, continued emphasis was needed. The following observations are representative of the team's findings with respect to the program:

- Surveillance Report 99-SR-040, "Operating Experience Review," dated November 11-18, 1999, was performed by the site quality assurance organization. The team determined that the audit was self-critical and identified several needed program improvements. The audit concluded that plant personnel did not effectively use operating experience. The team reviewed the results and found that no action had been taken on the audit findings until June 2000. The team concluded that based on the significant programmatic nature of the findings that the licensee's response was untimely. However, the team verified that the corrective actions were eventually included in the corrective action program 2000 business plan and were completed by the end of the year.

- The team reviewed the licensee's self-assessment, "Operating Experience Peer Evaluation," dated September 5-7, 2000. The assessment concluded that the program needed improvement in that the "observed performance did not indicate an active program or that individuals were sufficiently engaged with respect to the usage of operating experience." The team reviewed a number of condition reports that were initiated as a result of the assessment. For example, CR 200006619 was initiated to address operating experience training because as the assessment stated "station personnel are passive with respect to obtaining operating experience information in support of their day-to-day activities." However, the corrective actions did not address the need to train personnel on the value of operating experience as it relates to their daily work,

but established a focus group with departmental points of contact. The team determined that no site wide training had been provided on operating experience and none had been provided for specific target audiences such as engineering, operations and maintenance personnel.

- The team reviewed nine selected operating experience review evaluations. Of the nine which were reviewed, the team found thoroughness issues with four of the evaluations. For example, CR 200009927 evaluated a 10 CFR Part 21 notification of a defective Foxboro relay module. The licensee verified that the defective relay was not installed in the plant but failed to place an in-stock spare on administrative hold until verification that the spare relay was not defective. The reviewer had intended to place the spare relay on hold and communicated this intent by e-mail versus using the condition reporting system for tracking the action. Subsequently, the individual did not follow through with his intentions and the verification was not performed until the inspection team discovered the problem. The spare relay was later checked and found to be satisfactory. The licensee initiated CR 200100904 to address this problem. An additional example of an inadequate response to an operating experience review item involved the failure to evaluate a residual heat removal system operating procedure. Specifically, CR 200004907 evaluated an industry notification which addressed the need to evaluate the system fill and vent procedure for certain specific problems described in the notification. The individual who performed the review misunderstood the process and failed to initiate a corrective action item or communication to staff item, consequently no procedure review was performed. The licensee initiated CR 200100894 for this problem.

- The team noted problems in the timeliness associated with completing operating experience reviews and corrective actions. For example, the evaluation for CR 199802561 took two years to complete. This item concerned NRC Information Notice 95-52 Supplement 1 which was related to fire protective systems. Interviews indicated that the delays in addressing this issue were related to resource limitations. Another example involved CR 199810884 which took 17 months in order to complete the needed corrective actions. This item was related to pipe weld failures in the chemical volume and control system that had occurred in the industry. The corrective action involved a radiograph of the suspect flow orifice in the piping to determine if cavitation damage had occurred.

- The team attended a CARB meeting on February 8, 2001. The meeting focus was to approve a SL1 condition report regarding the failure to maintain containment integrity calculations provided by a vendor. The presenter failed to address operating experience in the report, however, this shortcoming was identified by the board co-chair.

- The team reviewed the backlog of operating experience review items. In January 2001 the total backlog of open items was 133 with 38 items being overdue. The team noted that the backlog had gradually decreased from 366 in October 1999. A significant reduction in the backlog had occurred in June 2000 when the backlog decreased from 205 to 118. The licensee attributed this reduction to an increase in resources in the this area. The team concluded that

progress had been made in the operating experience review backlog but continued emphasis was warranted in this area.

G. Supplemental Inspection - Emergency AC Power Unavailability, >2EDG Performance Indicator

a. Inspection Scope

The Indian Point 2 performance indicator (PI) for "Emergency AC Power Unavailability, >2EDG" exceeded 2.5% (white band) starting in the 2nd quarter of 1999. The AC power system availability declined due to the failure of the 23 emergency diesel generator (EDG) to operate on demand during the reactor trip event with complications on August 31, 1999. EDG 23 failed because the overcurrent trip device (amptector) on its supply breaker to emergency bus 6A had been improperly calibrated. The improperly calibrated amptector added 1444 hours of unavailability and increased the fault exposure hours in the calculated PI for EDG 23.

The NRC review of the performance of the emergency AC power supplies during the August 31, 1999, event was previously described in NRC Augmented Inspection Report 05000247/1999-08, Followup to the Augmented Inspection Team Report 05000247/1999-013, and the Enforcement Followup Inspection to the Augmented Inspection Team Report 05000247/1999-014. The corrective actions related to testing of the safety related breakers and other issues were described in a licensee letter to the NRC dated June 5, 2000.

b. Findings

During these reviews, the NRC verified that the licensee's evaluations provided assurance that the root and contributing causes for the EDG failure were understood, that the extent of condition on other safety-related breakers was identified, and that corrective actions to correct weaknesses in the calibration of overcurrent devices were sufficient to address the causes for the event and to preclude recurrence. As such, the NRC removed this issue from consideration in future Agency actions, per the Action Matrix, in accordance with the guidance in Inspection Manual Chapter 0305, "Operating Reactor Assessment Program."

H. Conclusions Associated with Licensee Control Systems for Identifying, Assessing, and Correcting Performance Deficiencies

The team determined that the overall program for problem identification and resolution was adequate. It was noted that some improvements had been made, in particular, an increased emphasis on problem identification and an improved metrics and tracking system for corrective actions program issues. However, the team identified several continuing challenges to the program. In particular, it was observed that the effectiveness of some of the corrective actions for previously identified deficiencies was of somewhat mixed quality. Additionally, significant challenges existed with respect to the timeliness of corrective actions and longstanding issues remained with respect to prioritizing issues for resolution and in trending causal factors. Further, the backlog associated with open corrective actions presented an ongoing challenge to the station. Finally, as noted in previous assessments, weaknesses continued to exist in the

operating experience review program, although some improvements had been made in this area. While performance difficulties continued to exist with respect to the review and disposition of technical issues, the site has made considerable progress in areas related to industry outreach and bench-marking efforts.

2. Assessment of Performance in the Reactor Safety Strategic Performance Area

A. Emergency Diesel Generator, 480 Vac and Service Water Systems

1. System Design

a. Inspection Scope

The team selected the emergency diesel generator (EDG), 480 Vac and service water systems for detailed reviews. The selection was based on these systems' importance to overall plant risk and also due to the fact that these systems had not received recent, in-depth reviews by either the NRC or the licensee. The team reviewed licensing and design basis documents for these systems, including the Updated Final Safety Analysis Report (UFSAR), calculations, engineering analyses, and system descriptions (when available) to determine the functional requirements of the systems for normal, abnormal and accident operating conditions. The team reviewed a sample of risk significant plant modifications for the selected systems, including those that involved vendor supplied products and services to verify that the design changes did not negatively impact the ability of the systems to perform their design bases functions and that the changes would not cause initiating events. During this review, the team evaluated the effectiveness of the licensee in controlling design and licensing information, in providing necessary calculations to support plant changes and in developing and implementing thorough post-modification testing. The team assessed the adequacy of the licensee in evaluating applicable system and support system design attributes and regulatory requirements. The team also reviewed system modifications to ensure that original design and accident analyses assumptions were not invalidated by the changes. Additionally, the team reviewed the modifications to confirm that the licensee had properly evaluated any required changes or additions to plant procedures.

The team conducted general walkdowns of the systems. Also, recent changes to plant maintenance and operating procedures were also reviewed to ensure that they did not result in inadvertent design changes to the systems. For procedures that involved design changes, the team verified that the change was subjected to the appropriate design change processes, including review in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments."

The team assessed the adequacy of communications between the site departments during the performance of design related activities such as the updating of training programs, updates of design related materials and the performance of operability evaluations. The team verified that the appropriate departments were involved in the evaluation and concurrence process for the approval of activities that included non-routine maintenance, temporary modifications, and field change requests. The team also assessed the adequacy of the licensee's control of vendor supplied services and products, including the process for communicating identified deficiencies to the vendor.

Finally, the team reviewed a sample of condition reports to assess the effectiveness of corrective actions for deficiencies involving design activities.

b. Findings

b.1 480 Vac and Emergency Diesel Generator System

The 480 Vac system provides power to safety and non-safety related equipment. The safety-related equipment is powered by a four bus, three train arrangement normally supplied from off-site power through the 6.9 kV buses. Upon loss of the normal off-site supply, the safety-related buses are powered from three emergency diesel generators. An alternate source of power to the buses is also available from three gas turbine generators that connect to the electrical system at the 13.8 kV level. The 480 Vac system is supported by the 125 Vdc system for switchgear and EDG control power and the 118 Vac system provides power for the safety injection initiation instrumentation.

The team reviewed the important design control aspects of the 480Vac and emergency diesel generator system. A number of performance issues and weaknesses were identified. The following observations are representative of the issues identified by the team.

EDG Building Ventilation System

The team reviewed the ventilation system for the three site EDGs. The EDGs occupy a common building. Calculation GMH-00006-00 determined the maximum building temperature under worst case conditions, assuming three of the six EDG building exhaust fans were unavailable, to be 126°F. In response to the team's questions on the capability of the electrical equipment in the building to operate at the maximum calculated building temperature, the licensee found that the control power auto-transfer switches for the diesels had not been qualified for the maximum building temperature.

The team also reviewed the settings of the thermal overload devices for the ventilation exhaust fan motors and found that the thermal overload ambient compensation had not been designed for the maximum building temperature. As a result, the trip point required derating for the higher temperature. The team also noted that the thermal overload calculation was based on a different device than what was actually installed in the circuits and did not account for the manufacturing tolerance which the team later found to be $\pm$ 20%. The team also observed that the thermal overloads were not periodically checked as part of the preventive maintenance program. In addition, the team found that the voltage drop calculation for the exhaust fan power circuits did not consider the maximum possible building temperature.

The above errors were a result of the licensee failing to confirm the adequacy of these components in a maximum ambient temperature of 126°F, which was 22°F above their nominal rating of 104°F. The licensee performed calculation FCX-00421-00 and determined that there was no immediate operability concern since, with two fans operating the building temperature would not exceed 104°F with an outside temperature up to 73°F.

The licensee subsequently revised the thermal overload calculation using derating factors obtained from the manufacturer for the higher room temperatures. The calculation indicated that the specified dial setting of 9 would have been satisfactory because the original setting included a 15% margin for the motor service factor. However, the calculation also concluded that a dial setting of 10 would be implemented to provide additional margin to the trip point. The team later found that the licensee had not verified the as-built settings of the overloads prior to revising the calculation and a field verification determined that five of the six fans were set at a dial setting of approximately 8.66 and the sixth fan, added by modification CPC-91-06847-H, was set at a dial setting of 9.0. The licensee reviewed the operability of the fans for the setting of 8.66 and concluded that there was sufficient margin to prevent tripping at an ambient temperature of 126°F.

The team determined these issues to be of very low significance (Green) because the as-found thermal overload settings would not have resulted in the loss of ventilation at the maximum building temperatures, the effects of elevated temperature on the voltage drop calculation would have been negligible and information obtained from the vendor indicated that the control power transfer switch power circuitry would have remained functional at the elevated temperature.

The team considered the failure to verify the adequacy of the design temperature ratings of components in the EDG building to be a violation of 10 CFR Part 50, Appendix B, Criterion III," Design Control." This violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy, issued May 1, 2000 (65FR25368). These issues were entered into the corrective action program as CRs 200100780, 200101447, 200101852 and 200102336 **(NCV 05000247/2001-002-002)**.

EDG Manual Load Control

The team reviewed the EDG loading calculation, FEX 000148-00, and observed that the sizing of the diesels was acceptable, but that little design margin was available when the required design basis assumptions were applied. The team also found that some of the assumptions and conclusions of the calculation regarding operator actions had not been formally transmitted to operations procedures.

The team reviewed the assumptions for frequency tolerance and individual motor load data.[10] The EDG vendor instruction manual, (VIM)-2351, included a section on setpoints which indicated a frequency tolerance of +/- 0.5 % which was included in the loading calculation. However, the team found that the surveillance tests for the EDGs either failed to include an acceptance criterion for frequency (Procedure PT-R14) or contained an acceptance criterion different than that assumed in the EDG loading calculation (Procedures PT-M21 and PT-R84).

The calculation also contained an assumption that the auxiliary feedwater pump flow would be throttled by operators during the accident (versus in a runout condition) prior to the transition to the recirculation phase following a loss-of-coolant accident (LOCA). However, that assumption had not been formally transmitted to operations for inclusion in plant procedures. The team also found that the emergency operating procedures (EOPs) had been recently updated to include revised motor loads but the update failed to include the correct loading values from the EDG load calculation. In many cases, the errors observed were non-conservative.

The team determined these issues were of very low safety significance (Green) because the ability of the EDGs to provide emergency power was not affected and the procedure issues would not have impacted safe operation of the affected systems.

The failure of the licensee to translate the design requirements for EDG loading into appropriate procedures and instructions is considered an additional example of the non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control." These issues have been entered into the corrective action program as CRs 200100777, 200100599, and 200100943 **(NCV 05000247/2001-002-002)**.

Alternate AC Power Source Voltage

The team reviewed the capability of the gas turbine (GT) generators to power the safety-related shutdown loads. The licensee was unable to locate a voltage drop calculation to demonstrate that adequate voltage could be supplied to the required loads. Subsequently, the licensee performed an evaluation to address this issue. The team reviewed this evaluation and found that the licensee failed to confirm the actual tap setting of the 13.8 kV to 6.9 kV transformer which connects the alternate AC source to the plant. This resulted in a non-conservative input to the evaluation. The team also noted the evaluation was performed for GT-1 which is located on site and did not initially evaluate the voltage available from GT-2 or GT-3 which are located offsite and may have been more limiting due to voltage drop considerations.

The team determined this issue did not have a credible impact on safety because the load assumed in the evaluation was significantly higher than actual expected safety bus loads. Even with this resultant voltage drop, sufficient voltage would be available to power the safety-related loads. Although this issue should be corrected, it constitutes a

[10] Frequency affects motor speed for the driven loads; a higher frequency results in additional load to the EDGs

violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. This issue was entered into the corrective action program as CR 200101298.

480 Vac Load Ampacity Calculations

The team reviewed the ampacity rating for selected 480 Vac feeders, including the feeds to the 480 Vac switchgear and the service water pump motors. The licensee's calculation EPG-00027-00 indicated that the loss-of-coolant-accident (LOCA) load, with offsite power available, could be 2,420 kVA or 2,911 Amps. The team found that the calculation for the feeder to Bus 6A contained an incorrect input for the rating of the bus connection and used incorrect units. Based on the information supplied, it appeared that the bus would have been overloaded by 400 Amps. The licensee was subsequently able to demonstrate that the connection from the EDG to the bus had been analyzed for the re-rating of the EDG to carry 3,300 Amps.

The licensee could not produce a calculation for the service water pump motors that evaluated the adequacy of the feed from the Unit 2 buses (original design) or from the Unit 1 alternate supply. The licensee subsequently identified relevant correspondence from the original architect engineer from the 1969 time frame and also evaluated the cable size using the guidance in Okonite Engineering Bulletin EHB-98. Although a formal calculation had not been completed by the completion of the inspection, it appeared there was an acceptable basis for the original design. The team determined this issue did not have a credible impact on safety because the design was subsequently determined to be acceptable to support plant operations. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. These issues have been entered into the corrective action program as CRs 200101463, 200100584 and 200100796.

Design Inputs for Load Flow and Voltage Drop

The licensee's design basis calculations included voltage drop or load flow studies for the 480 Vac, 118 Vac, and 125 Vdc systems to demonstrate sufficient voltage at the safety-related loads. The team found that the 480 Vac load flow calculation, FEX-000144-00, included a number of unverified assumptions and inputs. These included the lack of a controlled basis for the impedance diagram and conflicting motor data. Also, the offsite system operating conditions were inconsistent with those used in the degraded voltage studies.

These issues did not have a credible impact on safety because the team reviewed a sample of assumptions and inputs and found that the variations in input data would not have affected the conclusion of the calculation. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. These issues have been entered into the corrective action program as CR 200100583 and CR 200100591.

Instrument Power Supply Voltage Automatic Transfer Point

The team reviewed the operation of the 118 Vac system safety-related inverters which power the safety-related instrument buses. The inverters have a solid state transfer switch on their outputs that transfers the output from the inverter to a transformer supply in the event of a degraded input or output voltage. The team found that there was no engineering evaluation to support the transfer set point for the inverters.

The team determined this issue did not have a credible impact on safety because the inverter output is periodically monitored and verified to operating at an acceptable value specified in the daily log. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. This issue has been entered into the corrective action program as CR 200100908.

Auxiliary Feedwater Pump Motor Loading

The team reviewed the sizing of the auxiliary feedwater pump motor and found that the as-built rating of 400 horsepower at a 1.15 service factor would be exceeded with an assumed runout load of 490 horsepower as indicated in the loading calculation. The licensee could not locate correspondence from the motor manufacturer that was referenced in the loading calculation. However, the licensee had a manufacturer's performance test of the motor at 500 horsepower and a thermal stress calculation that indicated there would be an acceptable operating life at 500 horsepower. The failure of the licensee to clearly document the design bases for this pump was considered a design control weakness. The licensee initiated CR 200100972 to further evaluate this issue.

Alternate AC Supply Transformer Replacement Modification

The team reviewed safety evaluation 99-339-MD associated with the modification that replaced the GT-1 transformer. The team found that the safety evaluation failed to document that, while the transformer was non-safety related, it did in fact perform a function important-to-safety as the alternate ac power source. The modification package also lacked any references to important bases documents, including the calculations for the no-load tap setting. The team determined that these issues represented weaknesses in the licensee's design control process.

b.2 Service Water System

The service water system provides cooling to safety-related and non-safety-related components through two separate main supply headers. Flow to each header is provided by three pumps, each rated at 5,000 gallons per minute (gpm) at 220 feet of water discharge head. The pumps take suction from a common intake bay supplied from the Hudson River through two parallel traveling screens. In addition to the traveling screens, there are rotating strainers installed between the pump and the main headers to remove any particles or debris that could obstruct the flow paths through the components.

The main headers are aligned and designated as “essential” and “non-essential” headers. The essential header supplies cooling to all of the safety components except the component cooling water system heat exchangers. The non-essential header supplies the component cooling water system heat exchangers and the non-safety related components. The system design ensures that both headers will be able to perform their safety functions following any single active failure in the system.

In the event of a LOCA, operators are required to isolate the non-safety components from the non-essential header prior to entering the recirculation phase. The system can also be aligned for three header operation during which both the essential and non-essential headers supply only their respective safety-related components and the non-safety-related components are supplied by a separate river water system. The team reviewed the important design control aspects of the service water system. A number of performance issues and weaknesses were identified. The following observations are representative of the issues identified by the team.

Non-Essential Header Flow

The team identified that the licensee did not have a documented analysis or test that verified the ability of the service water system to supply the post-accident design flow to the component cooling water (CCW) heat exchangers. The licensee had a hydraulic model, Calculation PGI-00371, Rev. 0, which addressed the normal system lineup with the non-essential header supplying both the non-safety related components and the CCW heat exchangers. However, the analysis did not confirm the ability of the system to provide the required 2,500 gpm to each heat exchanger following an accident.

In response to this finding, the licensee used the flow model to evaluate the adequacy of flow to the heat exchangers under design basis accident conditions while assuming the service water pump was at the maximum degraded condition of 7%. This analysis showed that one of the CCW heat exchangers would receive 2,725 gpm and the other 3,054 gpm. Although this analysis was preliminary, it was determined that the service water system and CCW heat exchangers were operable.

The team found the licensee’s immediate actions to address this issue, including the operability determination, to be acceptable. The system would have been able to perform its intended functions, as such, the team determined this issue did not have a credible impact on safety. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC’s Enforcement Policy. This issue was entered into the corrective action program as CR 200100566.

Containment Fan Cooler Radiation Detector Analysis

The containment fan coolers were equipped with two radiation detectors in the service water system outlet flow paths to provide for monitoring effluent discharge paths for radioactivity that could be released from postulated accidents. This feature was incorporated into the design since the service water system pressure at locations inside the containment with the system in the incident mode alignment could be below the containment post-accident design pressure of 47 psig. These detectors were designed to actuate an alarm in the control room whenever their set points were exceeded. The

team reviewed the detector set point calculation, RS-92, Rev. 2, to verify that it was appropriate to prevent exceeding the allowable accident radiation exposure limits specified by the regulations. The team found that the analysis had been performed for normal operating conditions assuming a total service water flow of approximately 16,000 gpm and a 600,000 gpm dilution flow from the circulating water system. The team noted therefore under design basis accident conditions the circulating water system may not be operating and that this assumption was non-conservative.

The licensee acknowledged this finding and performed another calculation that credited other conservative assumptions in the original calculation. The results of the revised calculation showed that the setpoint would have ensured that the accident exposures would have remained within regulatory limits, as such, the team determined this issue did not have a credible impact on safety. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. This issue was entered into the corrective action program as CR 200100879.

Essential Header Flow Verification

The team reviewed test procedure PT-R93, "Essential Service Water Header Flow Balance," Rev. 3, which performed an operational test of the essential service water header to verify that design flow was provided to all system components. The test is normally performed at the end of each refueling outage on the header that is aligned as the essential header and using the two lowest performing pumps to simulate worst case design basis accident conditions.

The team noted that during plant operation the system was realigned every six months to equalize the time each header functioned as the essential or non-essential header to more evenly distribute pump wear. However, the team also noted that there were no requirements in the test procedure, or other plant procedures, to ensure that the refueling interval testing would alternate between the two headers. The licensee was able to verify from operating records that both headers would function properly as the essential header. The team considered the lack of directions to alternate headers during testing to be a weakness with the flow testing procedure. The licensee initiated CR 200100511 to address this issue.

Strainer Blowdown Flow Safety Evaluation

The team reviewed test procedure PT-R93, "Essential Service Water Header Flow Balance" that was performed on August 24, 1998, following the replacement of all six service water pumps during 1997 and 1998 (Modification Number FMX-96-10376-M). During the test, the pumps were unable to deliver the design basis flows to all of the safety-related components and CR 199807295 was generated. In reviewing this issue

the licensee discovered that the service water strainer blowdown flow was at approximately 600 gpm. The flow was adjusted to the required value of 225 ± 25 gpm and the test was re-performed successfully. The licensee then implemented a temporary facility change (98-222) to maintain the blowdown valves at the new throttled setting.

The team reviewed the documents associated with the temporary modification and determined that safety evaluation 98-322-EV, Rev. 2, did not clearly address the required strainer blowdown flows. The safety evaluation indicated that UFSAR Table 9.6-1 specified the minimum essential service water pump strainer blowdown flow as 100 gpm. The safety evaluation further identified that service water operability could be maintained with as little as 0 gpm and as much as 250 gpm without reconciling these differences with the UFSAR specified minimum flow. In addition, the strainer supplier recommended a blowdown flow rate of 2 to 3% of the through-strainer flow.[11] Calculation FFX-00713, Rev. 0, documented that the maximum through-flow was approximately 6,923 gpm. Using 2% of this value would yield a minimum allowable blowdown flow of 138 gpm. The calculation showed that with the throttle valves set at the new normal operating minimum flow of 200 gpm, the actual blowdown for worst case accident conditions would be 164 gpm, thereby meeting the vendor's recommended minimum flow. Therefore, the team determined that, although the 225 gpm ± 25 gpm setting for normal operating blowdown flow was adequate to maintain strainer operability, the safety evaluation was weak since this value had not been evaluated against the correct basis provided by the vendor (138 gpm). Additionally, the safety evaluation did not identify that the 100 gpm UFSAR minimum value was inadequate and would have incorrectly allowed 0 gpm blowdown flow. The licensee initiated CR 200101133 to address this concern.

b.3 General Design Control Observations

The team observed that there appeared to be a general difficulty in retrieving design basis information to support design control, testing and plant modification efforts. This issue had been previously identified and slow progress has been made to improve in this area. Additionally, this deficiency appeared to have had additional plant staff impact in that some inconsistencies in the review of certain technical issues were observed. The team noted that the licensee's business plan incorporated long-term initiatives to address this issue.

2. Procedure Quality

a. Inspection Scope

The team reviewed licensee event reports, NRC inspection reports, self-assessments, and condition reports to evaluate the extent that procedure quality has contributed to previous performance issues. The team reviewed a sample of procedures involved in performance problems to assess the technical adequacy of those procedures. The reviews included a verification that the procedure steps would achieve the required

[11] The lowest blowdown flow would occur at maximum through-strainer flow conditions that would correspond to the lowest pump discharge pressure

system performance for normal, abnormal, remote shutdown and emergency operating conditions. Procedures were also reviewed to ensure the activity was accomplished within the plant design bases and regulatory requirements, and that procedure inadequacies did not exist that would cause an initiating event. The team reviewed maintenance procedures to ensure they were sufficient to perform the task, that they included independent quality verification of important attributes, and that they resulted in the task being performed consistent with the equipment vendor instructions and specifications. A sample of important vendor manuals were also reviewed to ensure they were complete and up-to date. The team reviewed the effectiveness of the licensee in ensuring current copies of documents were in place in the working files and that procedures affected by modifications or industry experience were updated in a timely manner.

The team reviewed the procedure change process to ensure it was in accordance with regulatory requirements and that appropriate personnel were involved in the development, review and approval of procedure changes. The team also reviewed the adequacy of controls for developing special or complex procedures to ensure that they were adequately validated and discussed with the plant personnel prior to implementation.

The team evaluated a sample of temporary procedure changes to ensure the changes were reviewed and approved in accordance with technical specification requirements and that the changes were consistent with the plant design and licensing bases. The team reviewed night orders, work orders and other documents to ensure that they did not result in uncontrolled procedure changes. The team also reviewed a sample of condition reports involving procedure quality to assess the effectiveness of corrective actions.

b. Findings

b.1 General Procedure Issues

Emergency Fuel Oil Transfer Procedure

The team reviewed AOI 27.3.1, “Emergency Fuel Oil Transfer Using the Trailer,” Rev. 0, and found that the instructions for filling the trailer from the gas turbine fuel oil storage tank were deficient. This procedure is used to transfer fuel oil from the gas turbine fuel oil storage tank to replenish the fuel oil supply to the onsite emergency diesel generators. The procedure improperly directed the operator to connect the trailer fill hose to a drain line on the tank connection manifold rather than the fill line. Further, the precautions and limitations of the procedure stated that a flush of the trailer fuel lines may be required to remove ethylene glycol used for freeze protection. However, there were no instructions for performing this task and an operator interviewed by the team was unaware of how that particular flush evolution would be accomplished.

The team considered this issue to be of very low safety significance (Green) because the use of this procedure has never been required and would require minor changes to resolve the discrepancies. The failure to establish adequate procedure directions is considered an additional example of the non-cited violation of TS 6.8.1. This issue was entered into the corrective action program as CR 200100944 **(NCV 05000247/2001-002-003)**.

Temporary Procedure Change Process

Addendum VI to SAO 100, "Indian Point Station Procedure Policy," Rev. 3, described the process for implementing temporary procedure changes (TPCs). A TPC provides guidance for plant operations when existing plant procedures cannot be performed as written. The procedure stated that if not required for immediate operation of the plant, then the procedure shall be revised in accordance with SAO 100. The team reviewed TPC 00-0853 which was implemented to change alarm response procedure (ARP) AS-1 (Accident Assessment Panel 1; windows 5-4 and 6-4) because a temporary modification had disabled the associated alarm inputs. Since the alarm inputs had already been disabled and the change was not required for immediate operation of the plant, the team determined that a TPC was not the appropriate mechanism to change the procedure.

The team considered this issue to be of very low safety significance (Green) because the use of this TPC had minimal affect on plant operations. However, the failure to implement the requirements of SAO 100 for the use of TPCs is considered an additional example of the non-cited violation of TS 6.8.1. This issue was entered into the corrective action program as CR 200100866 **(NCV 05000247/2001-002-003)**.

Biennial Procedure Reviews

The team found that the licensee did not implement biennial procedure reviews in a manner consistent with existing administrative guidance. SAO 100, "Indian Point Station Procedure Policy," Rev. 31, stated that biennial procedure reviews apply to documents which implement the regulations of 10 CFR 50, Appendix B. The procedure also stated that procedures which are used routinely (at least every two years), may be excluded from biennial reviews. Examples included calibration procedures, check-off lists (COL), maintenance procedures, plant operating procedures (POP), surveillance test procedures, system operating procedures (SOP), alarm response procedures (ARP), and abnormal operating instructions (AOI). The team found that the generation support department personnel interpreted this guidance to mean that all COLs, POPs, SOPs, ARPs, and AOIs are exempted from biennial procedure reviews. However, the team noted that there was no mechanism to identify procedures that are not used within a two year interval, and would therefore require a biennial review. The licensee researched the basis for this interpretation and found that the quality assurance program description stated that routine plant procedures that have not been used for two years shall be reviewed before use to determine if changes are necessary or desirable.

The failure to implement the SAO-100 procedure was not subjected to a cornerstone significance determination process. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. This issue was entered into the corrective action program as CR 200101449.

Incomplete Plant Operating Procedures

Operations Administrative Directive (OAD) 33, "Procedure Adherence and Use," Rev. 15, requires that operators verify the completion of steps in POPs. While reviewing a controlled procedure binder in the control room, the team identified that two POPs used for the recent plant startup (December 2000) contained several procedure steps that were not properly signed off. Specifically, POP 1.1, "Plant Restoration From Cold Shutdown to Hot Shutdown Conditions," Rev. 55, and POP 1.2, "Reactor Startup," Rev. 30, had numerous procedure steps that were apparently completed, but not initialed by licensed operators. This was considered to be an example of a minor violation of a failure to follow procedures since it appeared that the affected procedure steps had actually been performed and only the associated signatures were missing.

The failure to implement the OAD 33 procedure was not subjected to a cornerstone significance determination process. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy.

Environmental Qualification Engineer Review of Work Orders

Station procedure SAO-430, "Environmental Qualification (EQ) Program," Section 2.2.12 required that the EQ engineer review all work packages on EQ equipment to assure that EQ considerations have been addressed. The team identified that this review was not performed for work order NP-99-06573. The team interviewed an EQ engineer, who stated that he was not aware of this procedure requirement and did not review all the completed work packages. The EQ engineer stated that he had reviewed and approved the general procedures that were used during the performance of the associated work. He also noted that he did not review all completed packages as a routine matter.

The team determined this issue did not have a credible impact on safety because there were no actual equipment deficiencies identified that were due to a lack of the EQ engineer review. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. This issue was entered into the corrective action program as CR 200100872.

Procedure Change Backlog

The team reviewed the backlog of operations procedure changes and noted there were about 650 Communications to Staff (CTS) items in the backlog. Many of the CTS items represented change requests for multiple procedures. Accordingly, the backlog of affected procedures requiring changes was substantially higher than 650. The team discussed the backlog with licensee personnel in the generation support department

(operations procedure writers) and reviewed the backlog and found that there was no formal mechanism to prioritize individual items. The only prioritization occurred when CTS items were received, and judgement calls were made as to whether immediate changes were necessary. The team identified a number of items which should have received elevated priority. The following examples are representative of the team's findings in this area:

- CTS 98-1248, dated October 21, 1998, referred to an Abnormal Operating Procedure (AOI 29.6) that implemented an operating principle that was inconsistent with current practice.

- CTS 99-0265, dated April 14, 1999, documented that a procedure check-off list (PCO 3.2) did not properly reposition two valves (residual heat removal heat exchanger motor-operated valves) following a safety injection.

- CTS 99-0535, dated July 28, 1999, identified that operations log sheet DSR-8M, associated with the gas turbine north and south fuel oil storage tanks, did not accurately reflect the proper minimum and normal tank levels.

The items listed above had been in the system for some time (nearly 2 ½ years for CTS 98-1248), and were more than minor editorial changes. The team considered the extent and age of the procedure change backlog to be a weakness in the maintenance of plant procedures. The team also noted that nearly all of the operations procedures had not received biennial reviews due to the misinterpretation of SAO 100 as discussed earlier, contributing to the time it takes for incorporating proposed changes by way of periodic procedure reviews and revisions.

Document Control

The team identified several minor document control issues associated with station procedures. For example, uncontrolled, and out-of-date copies of the post-run attachments of the diesel generator operating procedures (SOP 27.3.1.1, 27.3.1.2, and 27.3.1.3) were found in the EDG building. However, it did not appear that any out-of-date attachments had been used for obtaining and recording actual EDG data. The licensee promptly removed the uncontrolled attachments from the EDG building and initiated CR 200101382 to further review this issue.

The team also found that there was no mechanism or instruction to remove expired temporary operating instructions (TOI) from the controlled, active TOI binder located in the control room. Previously, the generation support supervisor removed outdated TOIs during routine tours. During the course of this inspection the team identified two expired TOIs that were still in the control room binder. The licensee promptly removed the expired TOIs from the control room binder and initiated CR 200101383 to further review these issues.

Procedure Use and Quality

The team determined that OAD 33, "Procedure Adherence and Use," Rev. 15, allowed broad flexibility for place keeping while using implementing procedures. The procedure recommended, but did not require, place keeping for continuous use procedures and operating instructions by placing a mark on the sign off line upon completion of the step (marks can be made in pencil and then erased). The team observed that during the power ascension on January 19, 2001, the status of ongoing evolutions was not apparent because place keeping within an active procedure was not consistently conducted. Although a panel walk down by the team did not identify any mis-positioned components or missed procedural steps, the team concluded that place keeping guidance and implementation was a weakness and made it difficult for operators to ascertain accurate system configurations.

The team also identified quality weaknesses associated with the procedure associated with scheduling, approving and assessing overtime. The team determined that procedure OAD 9, "Operations Section Organization," Rev. 27, did not institute maximum limits for excessive overtime. Rather, the procedure allowed workers to surpass the overtime limits for planned overtime with the advance approval of the assistant operations manager or higher. Further, excessive unplanned overtime required only the approval of the shift manager. The team also found that excessive overtime approvals did not require any assessment with respect to worker fitness for duty. The team reviewed overtime request and approval records, and did not identify instances where procedure requirements were violated. However, the team concluded that the procedure weaknesses represented the potential for inappropriate overtime hours being worked without including an assessment for fitness for duty concerns.

b.2 480 Vac and Emergency Diesel Generators Procedure Issues

Procedure Acceptance Criteria

The team reviewed various procedures associated with the 480 Vac and EDG systems and identified a number of performance issues. The following examples are representative of the team's findings in this area:

- The team noted that the EDG loading calculation assumed a frequency variation of +/- 0.5% based on the vendor setpoint tolerance. The team found that the safety injection with loss of off-site power surveillance test did not contain an acceptance criteria for EDG frequency. Based on the available design data the acceptance criterion should have been 60 Hz, +/- 0.3 Hz. Although the procedure did not specify an acceptance criterion, the team found that the results of the most recent testing performed during the 2000 outage confirmed that the frequency was within the values assumed in the calculation. The team also noted that the monthly EDG surveillance procedure and the 24 hour load test procedures specified an acceptance criteria tolerance of +/- 1.5 Hz which was not consistent with the loading calculation. In addition the team noted that the procedure for verifying the capacity of the EDGs did not include considerations of instrument uncertainty for the maximum loading (2300 kW) condition testing.

- The team reviewed control room operator log, DSR-1, and found that the minimum and maximum ranges specified for the instrument bus voltage were not bounded by the 118 Vac instrument power system voltage calculations.

- The team found that the vendor requirement to restrain the end cells of battery 23 had not been adequately translated into installation drawings.

- The team reviewed instrumentation and control preventive maintenance package for the undervoltage relays (ICPM 1741) for the 125 Vdc control power automatic transfer switches that supply EDG and 480 Vac switchgear control circuits. The team observed that the specified acceptance criteria of 100 +/- 2.0 volts was not consistent with the 125 Vdc voltage drop calculations FEX-00044-02 through FEX-00046-02 and FEX-00048-02 and would not ensure acceptable voltage at the dc loads prior to transfer.

The team determined these issues were of very low safety significance (Green) because none of the test results or operating data identified instances where equipment was operating outside of its design limits.

The team considered the failure of the licensee to include appropriate acceptance in the procedures and drawings to ensure activities have been satisfactorily accomplished to be a violation of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings.” This violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy, issued May 1, 2000 (65FR25368). These issues were entered into the corrective action program as CRs 200100777, 200100531, 200100908, 200101576 and 200100750 **(NCV 05000247/2001-002-004)**.

b.3 Service Water System Procedure Issues

Service Water Header Pressure Analyses

The team reviewed Alarm Response Procedure (ARP) Window 4-6, “Service Water Hdr 21, 22, 23, 24, 25, 26 High/Low Press,” Rev. 25, and DSR 1, “Unit 2 Central Control Room Log,” Rev. 77, and found that the service water header low pressure alarm set point was 53 psig and the minimum acceptable header pressure in the control room log was 48 psig . The team found that the bases for the low pressure alarm set point was to ensure there would be adequate pressure to supply flow to the main turbine lube oil coolers. The control room log minimum appeared to have been based on the same requirement but without an elevation head correction that should have been considered. The licensee did not have an engineering analysis to demonstrate that all safety-related components would receive adequate flow if header pressure was controlled based on these limits.

The licensee performed a preliminary analysis assuming a header pressure of 53 psig and it was determined that acceptable flows would be delivered to the system. However, the control room log limit of 48 psig was found to be inadequate, and it was raised to 58 psig by Revision 78 during the inspection to provide a 5 psig margin above the set point.

This issue was of very low safety significance (Green) because the team did not identify any instances of operation at less than 53 psig.

The failure to properly translate the header pressure design bases into plant procedures is considered an additional example of the non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control." This issue was entered into the licensee's corrective action program as CRs 200100707 and 200101410 **(NCV 05000247/2001-002-002)**.

Service Water Strainer Pit Flooding

The team reviewed the service water system for potential failure modes. It was noted that an event that requires the automatic starting of the service water pumps results in the potential for one of the service water pump vacuum breaker valves to fail open. These valves were located in the strainer room and would discharge directly into the space whose floor elevation (5' - 9") is several feet above normal Hudson River elevation. As a means of relieving an internal flood in the strainer pit, there was an eight inch drain line that discharges to the service water pump bay. This line included butterfly valve MD-501 that was maintained normally open by procedure COL 24.1.1, "Service Water and Closed Cooling Water Systems," Rev. 30.

Procedure AOI 28.0.4, "Plant Flooding-Conventional Side," Rev. 2 required closing MD-501 if river water level reached 5' - 8" to prevent flooding the room from the river (external flood). However, in this configuration, an internal flood from a failure, such as a vacuum breaker valve, could cause failure of all of the service water strainer motor operators. In response to this finding, the licensee initiated TPC 01-0039, dated January 24, 2001, which revised Procedure AOI 28.0.4. to continuously monitor the service water strainer pit for evidence of water in-leakage when the river water level reaches 5' - 8" and valve MD-501 is closed.

The team determined this issue was of very low risk significance (Green) because it involved the relatively low probability of a valve failure coupled with the low probability of an external flooding event.

The failure to properly translate the design bases into plant procedures is considered an additional example of the non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control." This issue was entered into the corrective action program as CR 200100878 **(NCV 05000247/2001-002-002)**.

Service Water Strainer Pit Drain Check Valve

The team noted that in addition to the manually operated valve discussed above, the strainer room drain line also contained check valve, MD-500, located on the outboard side of the room in the service water pump bay. This valve had safety-related functions to close to prevent river water from entering the room in the event of high river level and to open to prevent internal strainer pit flooding. The valve has a counter-balanced disk designed to assure opening at the very low differential pressure that would be associated such flooding. The team discovered that valve MD-500 was not included in the plant testing program to verify its ability to fulfill its function. In response to this finding, the licensee took immediate action to demonstrate operability by manually cycling the valve from the full open to full closed position and observing that the valve opened with minimal effort and that there was no restriction in movement. The team considered this issue to be of very low safety significance (Green) because the valve was confirmed to be operable.

The failure to test the valve by periodically exercising it to its safety function position is considered a violation of 10 CFR 50.55a, "Codes and Standards," paragraph (f), "Inservice Testing Requirements." This violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy, issued May 1, 2000 (65FR25368). This issue was entered into the corrective action program as CR 200101466 **(NCV 05000247/2001-002-005)**.

Inservice Testing Procedure

The team reviewed the results of performance test PT-Q26A, Rev. 7, "21 Service Water Pump," performed on September 13, 2000, and found that the test acceptance criteria reflected the original Aurora pump criterion for operability of $\geq$ 253 feet differential pressure at 1,500 gpm. The team noted that the licensee had not revised the acceptance criteria following the replacement of the Aurora pumps with Johnston pumps in 1997 and 1998 to properly reflect the characteristics of the new pumps.

The licensee indicated that the basis for the acceptance criteria corresponded to the 10% degraded head point for the Aurora pumps as documented in Calculation PGI-00371, Rev. 00. The calculation demonstrated that, with 10% degradation, the Aurora pumps could still provide the required design basis flow to all of the safety-related components. Although the replacement Johnston pumps' vendor curves showed better performance than the Aurora pumps at the 1,500 gpm test point, they showed somewhat lower performance at the 5,000 gpm design point. The team noted that there were several missed opportunities for the licensee to discover and correct this discrepancy. Preliminary analyses by the licensee during the inspection showed that if the pumps had been allowed to degrade to the acceptance criteria values in this test procedure and the other service water pumps' corresponding IST procedures, their performances would not have been adequate to meet the design basis requirements.

The licensee evaluated this issue and determined that if individual pump performance remained above the 95% “alert” value in the test procedures, the pumps would be capable of providing the design basis flows. The licensee also confirmed that all of the pump actual test results remained above the alert values and as a result all were considered operable.

The system would have been able to perform its intended design functions, as such, the team determined this issue did not have a credible impact on safety. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC’s Enforcement Policy. This issue was entered into the corrective action program as CR 200100170.

Service Water System Test Correction Factors

The team reviewed procedure PT-R93, “Essential Service Water Flow Balance,” Rev. 3, and identified that the acceptance criteria for minimum flows to the various safety-related components had not been adjusted to compensate for several factors that could result in accident flows being less than design basis requirements. These factors included test instrument uncertainty, actual river levels versus the design basis minimum level, and the effect of pump strainers at design basis maximum differential pressure. The team also noted that the procedure directed the installation of temporary flow instrumentation without provisions to ensure consistent installation from one test to the next.

The licensee evaluated this issue and determined that, although the factors discussed above were not accounted for in the procedure, there were sufficient margins in the established flows to ensure that all components were operable. The team determined this issue did not have a credible impact on safety because the system was capable of performing its design function. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC’s Enforcement Policy. This issue was entered into the corrective action program as CR 200100970.

Service Water Strainer Differential Pressure

The team reviewed design documents and operating and test procedures associated with the service water system strainers. Several procedures reflected a 9 psid design differential pressure limit across the strainer, and the strainer vendor manual documented 15 psid as the structural differential pressure limit. The team observed that during normal operation the flows in both the essential and non-essential headers were significantly lower than design basis accident flows due to flow throttling for temperature control. In an accident, however, the flow control valves would be either full open or bypassed in order to maximize heat removal. The differences between normal and accident flows were at the maximum in winter when throttling was maximized. An example of the difference was observed on February 5, 2001, when, with ice in the river, in three-header operation, the non-essential header flow was observed to be 3,250 gpm. The licensee had determined that the minimum accident flow would have been 5,780 gpm. Since the differential pressure is proportional to the square of the flow rate, for this particular day the strainer differential pressure would have increased by a factor of 3.2 for accident flow conditions. Since the actual differential pressure was 1.3 psid on

this date the non-essential header would not have exceeded the design limit of 9.0 psid as a result of expected post-accident flow rates. However, higher normal strainer differential pressure, well below the procedure limit would result in strainer differential pressures in excess of the design limit or the vendor's structural limit after accident flow conditions were established. Therefore, these normal operation procedural limits were inadequate.

The team also identified a weakness in the alarm response procedure, "Service Water Strainers Trouble," Rev. 25, which had an alarm set point at 8.5 psid. The alarm response procedure stated, "IF differential pressure remains above 15 psid, PLACE standby service water pump in service and shutdown service water pump associated with affected strainer." This direction would allow strainer operation above 15 psid for a limited period, which was contrary to the vendor's direction and could cause permanent damage. The licensee had no basis or analysis to demonstrate that its operating limit was adequate to prevent exceeding the strainer structural limit of 15 psid for accident conditions.

The team determined that these issues did not have a credible impact on safety because the differential pressure across the strainers was low enough that the design limit would not have been challenged even at the higher accident flow rates. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. This issue was entered into the corrective action program as CR 200101404.

Service Water System Operating Procedure

The team found that procedure SOP 24.1, "Service Water System Operation," Rev. 40, contained a precaution which stated "Do not operate 23 and 24 SWPs simultaneously, if it can be avoided by existing operational considerations, due to the potential for creating vortexing in the service water bay." The procedure contained a similar note following step 4.1.1.

The ability of these pumps to operate together safely was further called into question by a July 1994 evaluation report on a 1-to-6.4 scale model hydraulic study of the service water pump intake. The study had been commissioned by the licensee in response to three pump failures that occurred over a period of a few weeks. The report indicated that there were severe sub-surface vortices for almost all pump combinations tested, and because of the large length-to-diameter ratio, the pump columns were sensitive to flow imbalances and fluctuations. The report also indicated that the hydraulic performance of the existing service water intake did not meet the acceptance criteria selected for the study because of adverse sub-surface vortices. The most severe vortexing was noted with pumps 2,3,4, and 6 operating.

The licensee initiated CR 200100912 to document and further review this issue and determined that the procedure statements associated with vortexing were added by a procedure change in response to the report. This change had been reviewed by the Station Nuclear Safety Committee on August 25, 1994. The reason stated in the meeting minutes for the changes was "only because of the possible long-term effects of potential vortexing." The licensee also informed the team that the pump configurations were in accordance with the Hydraulic Institute Standards and that the new Johnston pumps, installed in 1997 and 1998, were more heavily constructed than the original Aurora pumps. In addition, the three pump failures that precipitated the original study had ultimately been attributed to improper coupling assembly and foreign object ingestion. Based on this information, and the fact that during normal operation no excessive wear or vibration had been observed in any of the pumps, the licensee concluded that the precaution and note were unnecessary and planned to revise the procedure to remove the procedure statements. The team considered the failure of the licensee to correct the procedure to be a weakness, in that it unnecessarily restricted operators from certain operating configurations.

3. Equipment Performance

a. Inspection Scope

The team reviewed various maintenance related issues for the selected systems to determine the licensee's effectiveness in identifying the causes and extent of equipment problems as well as in developing and implementing corrective actions. Additionally, an assessment of the implementation of maintenance rule (MR) requirements was conducted. The team reviewed maintenance related documents, observed maintenance activities and conducted plant tours to assess the effectiveness of the licensee in entering maintenance issues into the corrective action program. The team also reviewed open condition reports and corrective maintenance work orders for the selected systems to assess their potential impact on operability.

The review also included surveillance and post-maintenance tests to assess the effectiveness of the licensee in specifying appropriate acceptance criteria and to verify the effectiveness of controls to restore equipment to operation following testing. The team also reviewed the scope of the calibration program for the selected systems and sampled system instrumentation loops to ensure instrumentation important to safety was included. Additionally, the team reviewed the preventive maintenance programs for the selected systems to assess the program adequacy and to verify that design document, vendor manual and generic communication information were incorporated into the maintenance program. Observations of in-progress maintenance and testing on the selected systems were conducted.

b. Findings

b.1 480 Vac and Emergency Diesel Generators

Gas Turbine Performance

The team reviewed the performance of the GTs that provide a backup electrical supply in the event of a station blackout condition and for alternate safe shutdown in the event of a fire. Based on these functions, the GTs were included within the scope of the licensee's 10 CFR 50.65 maintenance rule program. The licensee established an availability goal of 80% (less than 3,504 hours unavailability in a 24 month period) and a reliability goal of less than 2 maintenance preventable functional failures (MPFF) and zero repetitive MPFF's in a 24 month period. The team noted that the GTs had not been meeting these goals since 1995. In addition, a review of the performance history documented in the existing site maintenance rule basis document for the gas turbines indicated that none of the goals (availability and reliability) were being met at that time and that the GTs remained classified as (a)(1) under the MR.

The team reviewed the system health report for the gas turbines for the 4th quarter of 2000 and noted that GT-2 was still not meeting the goals for availability and none of the GTs were meeting the goal for reliability due to numerous failures. Discussions with licensee personnel indicated that several outstanding issues impacted the station's ability to adequately maintain the GTs. For example, the preventive maintenance program lacked specificity and rigor and there was poor design information, such as electrical schematics and mechanical drawings available to the staff. The team also noted that there was a significant decline in performance of the GTs during the 4th quarter of 2000 that included several repetitive maintenance preventable failures. The licensee attributed these problems, in part, to a lack of preventive maintenance during the 2000 steam generator replacement outage.

The team determined these issue were of very low safety significance (Green) because the technical specification requires only one GT to be operable. In addition, the team did an independent calculation of the change in core damage probability associated with the current unavailability of GT-2 for an estimated repair length of 60 days and determined that the risk increase to be within the very low safety significance band (<1E-6).

The failure of the licensee to effectively implement corrective actions to ensure that the established maintenance rule goals would be met is considered a violation of 10 CFR 50.65 (a)(1). This violation of 10 CFR 50.65(a)(1) is being treated as a non-cited violation (**EA-01-055**), consistent with Section VI.A of the NRC Enforcement Policy, issued on May 1, 2000 (65FR25368). This issue was entered in the corrective action program as CR200100233 **(NCV 05000247/2001-002-006)**.

480 Vac and Emergency Diesel Generator Performance

The team reviewed the maintenance history, equipment performance and maintenance rule program aspects associated with the emergency diesel generators and 480 Vac systems. The review focused on system performance in the post-1999 time period since extensive follow-up was performed following the August 1999 loss of offsite power and reactor trip. The team determined that while minor equipment problems had been observed, the overall performance of the systems had been adequate.

b.2 Service Water

Instrumentation and Controls Preventive Maintenance

The team reviewed several EDG instrument calibrations which were performed using instrumentation and controls preventive maintenance (ICPM) packages and found that in several cases the entire instrumentation circuit was not tested. For example, several packages[12] were completed without control power available to test the resultant circuit actuations. The specified sensors were tested through verification of relay contacts, but in some cases, the resultant actuations such as alarm and annunciation were not tested. The incomplete PMs referenced a condition report, however, the inability to test the specific condition was not included in the report.

The team also reviewed ICPM package 1350, Rev. 3, that tested instrumentation associated with service water flow control valves FCV 1176 and 1176A. These valves control the flow of cooling water from the EDGs. The control circuitry includes contacts to open the valves if a high jacket water or high lube oil temperature is sensed on an operating EDG. Although the ICPM checked and calibrated the setpoint of the temperature switches, there was no testing to verify that the associated relay and circuitry would open the valves on a high temperature condition. The team reviewed CR 199900576 which documented that the licensee had identified this same issue during the development of the component function matrix. The CR recommended testing to improve plant reliability but also stated the devices are not important to nuclear safety since the valves also open on a safety injection signal, which was routinely tested. However, the team noted that a single failure of flow control instrumentation for the valves could result in a close signal to both valves. Consequently, during operation of the EDGs without the presence of a safety injection signal, the high temperature circuitry was important to nuclear safety since it was necessary to prevent the loss of the emergency power safety function due to a single failure that could isolate all cooling water to the diesels. The licensee reviewed the issue further and concluded that the high temperature circuitry was not tested but also identified a previous modification

[12] PM Packages No. 1779-1, Diesel Generator 22 Lube Oil System, Rev. 2, PM package No. 1778-1, Diesel Generator Jacket Water System, Rev. 2, and PM package no. 1776, Diesel Generator 21 Fuel Oil System, Rev. 4

which added a mechanical stop to prevent full closure of the 1176A valve. While the purpose of this modification was to provide sufficient flow velocity to prevent fouling of the system, the licensee was also able to show that with the valve closed to the mechanical stop, adequate flow would be provided to the EDGs.

The team discussed these findings with licensee personnel and found that the station had recognized the need to improve the ICPM program and developed a program to convert the packages to procedures that used the surveillance test procedure format. Further, the team also noted that the ICPM program did not include all of the various safety and non-safety related instruments. There were approximately 650 existing ICPM packages requiring action and approximately 600 instruments not included in the ICPM program scope. As a result of the team raising this issue, the licensee subsequently reviewed a random sample of approximately 100 ICPMs to assess the adequacy of testing and identified 7 additional discrepancies. Based on these results, the licensee completed a review of all safety-related instrumentation ICPM packages and verified that there were no concerns with equipment operability due to inadequate testing.

The team determined this issue did not have a credible impact on safety because none of the deficiencies affected any component operability. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. This issue was entered into the corrective action program as CRs 200100974, 200101411, 200101467 and 200101468.

Service Water Pump and Motor Replacement

Between July 1997 and January 1998, all six service water Aurora pumps were replaced with Johnston pumps. Also, in 2000, the motors for pumps 21 and 24 were replaced. Each pump and motor replacement was followed by a post-maintenance test (PMT) in accordance with procedure TP-SQ-11.016, "Post Maintenance Test Program." The test involved a performance of the applicable quarterly test procedure, PT-Q26A - F, which involved a single point (low-flow, high-head) pump test. The team reviewed this guidance and found it to be in accordance with the licensee's commitments to ASME OM Part 6. The team also noted that following a pump or pump motor disassembly or replacement, the procedure requires a single point capacity test for flow verification as well as checks for vibration levels, operating temperature and fluid leakage. The team further observed, that subsequent to the pump replacements, the pump vendor identified a nonconformance associated with pump performance curves in that the curves could be in error up to 3.8% due to a failure to take into account instrument uncertainties during the development of the curves. Capacity testing at more than one point would have increased the potential for identifying this discrepancy since at the test point (1,500 gpm at 307 ft) the original curve had negligible deviation from the curves that were subsequently adjusted for the potential error. Although the testing was in accordance with the station procedure, the team considered flow testing at a single point to be a weakness in the test program since it may not be adequate to verify pump performance over the full range of flows that would be experienced during normal and post-accident operation.

Emergency Diesel Generator Heat Exchanger Flow Measurements

The team reviewed PT-R93, "Essential Service Water Header Flow Balance," performed in July 2000, and noted that the procedure did not have an acceptance criteria for the flow through the individual emergency diesel generators. Instead, it contained an acceptance criteria for the combined flow of 1,200 gpm for all 3 EDGs. The team found that the licensee had previously initiated CR 200005646 to address deficiencies associated with the test and included the issue described above. The licensee had determined that, based on factors such as regular inspection and cleaning of the heat exchangers and the similarity of the parallel flow paths to the EDGs, that there was adequate assurance that each EDG had adequate flow. The team considered this item to be another example of testing program weaknesses. The licensee planned to improve the test procedure.

Motor Operated Valve "T" Drains

During a plant walkdown the team noted that the "T" drains for motor operated valve (MOV) SWN-44-4A were not installed at the low point of the motor as required. The licensee reviewed this condition and determined that the environmental qualification of this particular valve was not affected based on the expected post-accident pressure and temperature conditions. However, the licensee also found that the maintenance procedures for the MOVs were weak in that they did not include directions to ensure the drains were installed at the low point and the procedure did not specify the number of drains to be installed. CR 200101007 was initiated to further evaluate this issue.

Service Water System Performance

The team reviewed the maintenance history, equipment performance and maintenance rule program aspects associated with the service water system. The team determined that while minor equipment problems had been observed, the overall performance of the system had been adequate and that adequate flows would be delivered to important system components.

4. Configuration Control

a. Inspection Scope

The team reviewed operability evaluations performed for the selected systems to assess their thoroughness, technical adequacy and to ensure that they did not result in plant operation outside of the design and licensing bases. The team reviewed temporary modifications for the systems to evaluate whether they had been reviewed and approved by the appropriate personnel and that controls were in place to limit the duration of the installation. Additionally, the team reviewed whether procedures and drawings were updated where necessary. The assessment included a review of selected configuration control issues from the corrective action program data base to assess the adequacy of the licensee's problem identification and resolution program.

The team performed detailed walkdowns of the systems to determine whether the as-built configurations and lineups were consistent with plant procedures, drawings, UFSAR and design basis documents. The team also assessed the material condition of the system and support system components to determine if any conditions existed that could adversely impact operability. Additionally, the team performed a verification that

system components were properly labeled, cooled and lubricated to support the performance of their design function requirements and that power was available and correctly aligned to support automatic activations where appropriate. The team also reviewed selected system instrumentation to verify it was properly installed and calibrated. The team reviewed overall cleanliness, control of ignition sources and flammable material in the vicinity of the systems and control of temporary storage of materials and equipment to determine whether they impacted equipment operation or access by plant operators.

The team reviewed the backlog of corrective and preventive maintenance for the systems to assess whether any items or combinations thereof could impact equipment operability. The team assessed the process for controlling maintenance, including the assessment of risk and the inclusion of emergent work into the schedule. A sample of tag-outs were reviewed to assess the adequacy of the configuration for the planned work and the methods for controlling equipment status changes, including the control of entry and exit from Technical Specification (TS) action statements. A walkdown was performed to independently verify a sample of tag placements and component alignments. Long term tag-outs, control room deficiencies, operator work-arounds and equipment deficiencies were reviewed to assess the significance of these conditions. The review included an assessment of work control procedures for the control of hot work (welding, open flame, etc.) and the control of scaffolding in the vicinity of safety related and important operating equipment. The team also reviewed the process for performing maintenance using the Fix-It Now (FIN) team.

The team reviewed primary and secondary system chemistry controls to assess their effectiveness in preventing degradation of the reactor coolant system (RCS) pressure boundary. The inspection included a review of chemical analyses records, trends of water quality data and corrective actions taken when chemical variables exceeded established limits. The adequacy of the licensee's measures to prevent the introduction of chemical contaminants into the primary and secondary coolant water and measures to detect any inadvertent contamination were also reviewed.

The team further assessed the adequacy of the fission product barriers by verifying a selected portion of the containment isolation lineup, including attributes such as component positions and power availability to ensure that components were properly controlled in accordance with Technical Specifications. The team also reviewed a reactor coolant system leak rate determination and reviewed procedures for ensuring the containment atmosphere met design basis assumptions.

The team reviewed the operating performance history for the selected systems and components and compared the out-of-service time to the assumed time in the individual plant examination. The team also reviewed the licensee's efforts to integrate preventive and corrective maintenance to minimize unavailability.

The team performed a walkdown of the containment spray system to independently verify the system configuration. Temporary modifications for the system were also reviewed to ensure proper installation in accordance with design information.

b. Findings

b.1 480 Vac and Emergency Diesel Generators

Control of Setpoints for Delta - Temperature Annunciation

During power ascension, the control room alarm for abnormal Delta-Temperature (Delta-T) between reactor coolant loops was received. The operators took appropriate actions as specified in the alarm response procedure for the deviation. However, it was determined that the actual physical reactor coolant temperature differential was below the setpoint for the alarm. The operators stopped the power increase and contacted maintenance to investigate the alarm. Upon further investigation, it was determined that the setpoint for the delta-T deviation loop 2 channel was incorrect which resulted in the alarm actuating prematurely. Additionally, the preventive maintenance procedure used to calibrate the instrument contained incorrect setpoint values.

Although the setpoints were incorrect for the delta-T deviation alarm, there was minimal safety significance associated with the event. The delta-T deviation alarm prompts the operators to investigate a possible core flux distribution or instrument problem and is not part of any protective circuitry. Accordingly, this issue was determined to have very low safety significance (Green). The licensee took corrective actions which included adjustment of the setpoint to the proper setting.

The team considered the failure to properly adjust the setpoints of the Delta-Temperature circuitry as required by procedure an additional example of the non-cited violation of TS 6.8.1. This issue was entered into the corrective action program as CR 200100669 **(NCV 05000247/2001-002-003)**.

Oil Pads in EDG Instrumentation Cabinet

The team identified two oil absorbent pads inside the emergency diesel generator (EDG) 21 instrumentation cabinet. The system engineer indicated that the pads were used on October 26, 2000, to contain the oil from a leaking oil pressure switch (PC-5440-S). The leak had been repaired but the pads were not removed. The oil soaked pads represented an ignition hazard due to the presence of 120 volt direct current. Several components in the cabinet could fail in the presence of heat and flame and result in diesel unavailability. Technical Specification 6.8.1 specifies that written procedures shall be implemented which cover the Fire Protection Program. Portions of the Fire Protection Program are implemented at Indian Point 2 by procedure SAO-701, “Control of Combustibles and Transient Fire Load,” Rev. 8. The finding was determined to have very low safety significance (Green) because the issue did not represent a fire impairment, degradation of a fire protection feature, or a reduction in defense in depth.

The team considered the failure to remove the oil pads from EDG 21 gauge panel as required by procedure SAO-701 an additional example of the non-cited violation of TS 6.8.1. This issue was entered into the corrective action program as CR 200101448 **(NCV 05000247/2001-002-003)**.

Drawing Errors

The team identified a number of minor configuration control errors related to component labeling and drawing discrepancies. Representative examples included:

- Drawing 9321-F-4046, "Diesel Generator Building Floor Drains & Ventilation Control Air Piping Plans and Sections," did not show the 6th building exhaust fan which had been added to the system. Additionally, another drawing had mislabeled the exhaust fan.

- Drawing 243683, Revision 2, showed SOV-7215 as a two way solenoid valve whereas the installed valve was a three way solenoid valve. The installed valve also did not match the bill of materials listed on the drawing.

- Drawing 9321-F-3278, for heat trace panel 21, was not updated following a modification.

- Loop diagram 252686 had an error involving the depicted valve type.

- One line diagram 208088 contained an error associated with the service water cable size.

The team considered these to reflect weaknesses in the area of drawing controls.

Temporary Power Cord

The team discovered that an uncontrolled, temporary power cord was plugged into an energized power source outside the EDG building and fed under the building door to power a maintenance air compressor. The compressor had not been used recently nor had the power cord been disconnected as specified by Station Administrative Order (SAO) 218, "Housekeeping Policy," Rev. 14. The temporary power cord was disconnected and CR 2900100786 was initiated to document this issue. The team concluded that this represented a weakness in the configuration control process.

Control of Licensing Basis Information

The team identified examples of incomplete or inaccurate licensing basis information. It was noted that Technical Specification 4.6.D.1 indicated the gas turbine generator would provide a minimum of 750 kilowatts (KW) for alternate safe shutdown loads. The team questioned the basis for the 750 KW load rating and determined from a review of the station's fire protection analysis that in fact, approximately 1,700 KW was required. The system engineer concurred that TS 4.6.D.1 appeared incorrect and initiated several CRs[13] to prompt further engineering investigation. This apparent Technical Specification discrepancy did not appear to be a safety concern since the GT load ratings were well above (> 10,000 KW) the necessary loads required for the plant to achieve a cold shutdown condition. In addition, they are tested monthly in accordance with station test procedures PT-M38A, B & C.

The team also identified incomplete licensing basis information associated with UFSAR Section 8.2.3.2. This section of the analysis dealt with the emergency fuel supply for the diesels and stated that "19,000 gal of storage ensures that at least two diesels can operate to power the minimum engineered safeguards load for 73 hr." However, unless

[13] CRs 200101386, 20011386, and 200101486

one diesel fails following a demand signal, all three EDG's would start and load their respective emergency buses. The calculation which determined the minimum EDG operation of 73 hours did not account for the fuel consumption from the third diesel. The team estimated that if all three diesels were operating, the fuel storage capacity would provide for only approximately 50 hours of diesel operation. The licensee initiated CR 200100782 to revise this incomplete UFSAR description and include the fuel supply given all three EDGs are operating. This issue did not present a safety concern as adequate fuel monitoring capability was available to the operators when the EDGs are operating and an adequate supply of fuel oil was available on-site with the necessary transfer capability.

b.2 Service Water System

Systems not Operated as Designed

The team identified equipment related to the service water system in which the automatic controls were degraded or long-term temporary fixes were installed. For example, following the replacement of the service water pumps, the blowdown flow for the strainers had to be reduced to ensure sufficient flow was provided to the service water loads. This was accomplished using TFC 98-222 to throttle the blowdown stop valves. The team noted that although these were ball valves which are not designed to be used as throttle valves, a permanent modification has not yet been implemented and the temporary change has remained installed since 1998.

The team also found that the EDG temperature control valves, FCV-1176 and FCV-1176A, are usually operated in automatic but are periodically placed in manual when one or more of the valves begin to hunt. This problem was documented in CR 200006702 but had not been resolved at the time of the inspection. This issue was determined to be of minor safety significance because at the time of the inspection one valve was in manual and the other was in automatic and in the event of a high temperature condition on any diesel generator or a safety injection signal the valves receive open signals which override the automatic controls.

The team also reviewed a similar control problem associated with two automatic control valves which control service water flow to the hydrogen cooler. Pressure control valve PCV-1180 is on the inlet side of the hydrogen cooler and limits flow such that service water pressure inside the cooler is always below the hydrogen pressure. Temperature control valve, TCV-1101, is on the outlet of the hydrogen cooler and automatically controls the outlet temperature of the cooler. The team found that the temperature control valve for the generator hydrogen cooler could not always be operated in the automatic mode because of interactions between the two valves.

The team noted an additional example of problems with automatic control of the service water traveling screen 27. When the screen was actuated by the automatic control system the control room incorrectly received a loss of spray water pressure alarm. This condition was created when valve FCV-6983 and its actuator were replaced with a different model valve and actuator. The newly installed valve operated slower than the previous valve, resulting in the alarm circuitry actuating just prior to system pressure being reached. Although operation of the screen system was not affected, the change has resulted in unnecessary nuisance alarms.

These are examples of operating with known degraded conditions for extended periods of time. While these issues are individually of very low safety significance, they present a burden to operators.

EDG Temporary Facility Change

The team identified several administrative deficiencies associated with TFC 99-083 installed on the EDGs including: a caution tag on valve SWN 77-6 with an incorrect tag number, an unsigned TFC tag on valve SWN 77-6, absence of a date and signature on the deficiency tag on the 22 EDG raw water pressure gauge, and absence of a date on the tag hanging on valve SWN 77-5. In addition, TPC 2000-0055 was incorporated into SOP 27.3.1.3, “23 Emergency Diesel Generator Manual Operation,” but was not documented on the TFC. These issues were of minor significance and did not affect the safe operation of the plant.

Drawing and Document Discrepancies

The team identified UFSAR descriptions of radiation monitoring on the service water outlets from the containment fan coolers that did not accurately describe the arrangement of these devices. UFSAR Section 6.4.2.1.4 stated that the cooling water discharge from the cooling coils flows to the discharge canal and is monitored for radioactivity by routing a small bypass flow from each through a common radiation monitor. The team noted that the bypass flow did not come from the discharge of each cooling coil, but rather from common headers into which coolers discharged, and the bypass flow was monitored by two monitors and not one common monitor. Also, UFSAR Section 9.6.1.2 stated that the ventilation cooler and motor cooler discharge lines will be monitored by routing a small bypass flow from each through redundant radiation monitors. The team noted that the bypass flow did not come from the discharge of each cooling coil, but rather from common headers into which the coolers discharged. The licensee initiated CR 200100849 to address these inaccuracies.

The team also identified that service water system drawing, 9321-2722 Rev. 99, showed valve SWN-68-1 which could not be located in the plant. The licensee investigated this discrepancy and determined that this valve was associated with a service water flow instrument that was retired in place in 1991 when an improved flow instrument was installed. In 1993, a generic piping modification removed this valve and capped the elbow tap. However, this modification was never updated in the system drawings. The licensee initiated CR 200100910 to address this deficiency.

The team also identified six strainer drain valves which were not reflected on the system drawings. The licensee investigated this issue and determined that these drain lines had been installed by a modification in August 2000. The control room did not receive an as-built marked-up version of the drawing until January 23, 2001, after the team questioned the condition of these valves. The licensee initiated CRs 200101483 and 200101488 to address this issue.

The team noted discrepancies in the Service Water System Lineup, COL 24.1.1. The check off list required that the seal[14] numbers on the strainer blowdown stop valves be checked by comparing the number on the seal with the number recorded in the most recent documentation of acceptable flow. During the system walkdown, the team noted that the seals installed on these valves did not contain specific identification numbers. The licensee indicated numbered seals are no longer used at the plant, however, the plant procedures had not been updated to reflect this fact. The team also noted that the last service water system lineup performed on December 21, 2000, did not identify the problem with a lack of numbers on the seals. The licensee initiated CR 200100923 to address this issue. The team also noted that COL 24.1.1 had two entries for a valve identified as “Service Water Cooling Water to R-46, R-49 and R-53 (Header 4) Stop” labeled with two different numbers, once as SWN-5 and the other time as SWN-56. The team verified with that both situations referred to the same valve, and that the number should have read SWN-56 in both cases. The team determined this issue did not have a credible impact on safety. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC’s Enforcement Policies. However, they demonstrate a lack of attention to detail on the part of the licensee staff and weaknesses in the control of design drawings and documents. The licensee initiated CR 200100774 to address this issue.

b.3 Findings - Fission Product Barrier Control

During the walkdown of the containment spray system the team noted that a portion of the suction pipe between the refueling water storage tank and the containment spray pumps was outside of the building and above grade. The team reviewed the adequacy of the freeze protection on the exposed piping and noted that there could be an undetected loss of freeze protection in the event the neutral wire connection was lost. Further, it was determined that minimal measures were in place to ensure the continued

[14] The seal are installed to ensure that the valves remain in the required throttled positions

reliability and availability of the freeze protection circuitry for this portion of the system. The licensee acknowledged this potential and initiated CR200100858 to document and further review this issue.

B. Chemistry Controls

a. Inspection Scope

The team reviewed primary and secondary system chemistry controls to assess their effectiveness in preventing degradation of the reactor coolant system (RCS) pressure boundary. The inspection included a review of chemical analyses records, trends of water quality data and corrective actions taken when chemical variables exceeded established limits.

A confirmatory measurements radio-chemistry inspection was performed to review the licensee's ability to measure radioactivity in plant systems and effluent samples and the ability to demonstrate the acceptability of analytical results through implementation of a laboratory quality assurance program. Water, charcoal cartridge, (particulate) filter, and gas samples were analyzed by both the licensee and by the NRC Region I Mobile Radiological Measurements Laboratory.

Inspection of this area included a review of the licensee's internal laboratory quality program as described in Procedure No. CH-SQ-13.003, “Quality Assurance/Quality Control of Analyses,” Rev. 5. This procedure, as well as other licensee procedures, provided for the control of analytical results through a number of mechanisms including: definition of personnel responsibilities, the use of traceable standards, implementation of instrument control checks, and participation in an interlaboratory quality control program.

b. Findings

During a review of the secondary chemistry data sheets in the control room, the team found an out-of-specification reading for feedwater hydrazine concentration that was not circled in red and not noted by the control room supervisor who had reviewed the logs. It was later determined that the actual value was not out-of-specification due to the fact that the limits had been recently changed by a temporary procedure change. In reviewing this issue the team found that TPC 01-0015 changed the acceptable hydrazine requirement in the chemistry administrative procedure to greater than 100 ppb. This change was carried into the control room chemistry log book but not into the chemistry administrative procedure or the watch chemist logs. As a result, the apparent out-of-specification (70 ppb) readings were not red circled or noted in the control room log book since the watch chemist’s log sheet still indicated that the 70 ppb reading was acceptable. Further, the team’s review of watch chemist logs showed numerous red circled readings. These included: in-line instruments out-of-service, in-line sample temperatures high, low hydrazine levels and low primary lithium concentrations. The team noted that there were no condition reports written to document these out-of- specification conditions. The team determined that these issues were of minimal safety significance; the out-of-specification conditions were of short duration and properly corrected. These issues represented minor violations of regulatory requirements.

The team conducted a comparison of the split sample results of various radio-chemistry samples. It was concluded that the licensee was able to accurately quantify concentrations of radioactive material in effluent and in-plant samples. The comparisons for the sample results indicated that all of the measurements were in agreement under the criteria for comparing results. The comparison data associated with the sampling activities are presented in Table I.

The licensee's primary and secondary chemistry procedures and analysis were found to be satisfactory and in accordance with the Electric Power Research Institute guidance. The team concluded that the licensee had an adequate internal laboratory quality assurance and quality control program and had appropriately participated in an acceptable interlaboratory program.

C. Human Performance

1. Organizational Practices

a. Inspection Scope

The team conducted in excess of 50 hours of control room observations, including a 24 hour continuous coverage period. Operators were observed performing evolutions, tests, and responding to annunciators. The team also accompanied operators during the performance of operator rounds. Written logs and shift status reports or updates were reviewed for completeness and accuracy to ensure they provided sufficient detail.

Additionally, the team observed the performance of six operating crews in the simulator (on-shift, initial license, and staff crews). The team evaluated shift communications and turnover, operator knowledge of plant conditions and activities in progress, and operator response to alarms.

The team observed scheduled and non-scheduled maintenance activities, the control room command function, and implementation of compensatory measures as required by risk and safety evaluations. The team observed pre-job and pre-evolution briefings, evaluated communication between operations and other departments, and interviewed operators to determine their awareness and understanding of ongoing activities.

Activities of field support supervisors and nuclear plant operators were observed to determine whether operations personnel were knowledgeable about the status of systems, structures, and components, equipment performance, and the impact of ongoing work activities.

b. Findings

The team determined that a resource limitation existed with respect to the number of licensed operators. There were 6 shift managers one of whom is the assistant operations manager, 5 control room supervisors, and 5 watch engineers at the site. The team noted that this level of staffing had the potential to increase the amount of planned and unplanned overtime deviations. In fact, several instances of planned as well as unplanned deviations from the administrative overtime limits were observed since January 1st, 2001. The team noted that the licensee had initiated efforts to requalify

several individuals holding inactive senior operator licenses. Additionally, nine individuals were currently enrolled in a senior operator licensing class and were expected to be evaluated for operating licenses by the NRC in July 2001. Additional licensing classes were scheduled to start in April 2001 and early in 2002.

The team reviewed a number of self-assessments and third party assessments of operations training. It was observed that these assessments were self-critical and had identified a number of training weaknesses. The team concluded that although a number of significant challenges existed with respect to the operator training program, that the licensee had recognized these challenges and had initiated measures to improve the overall training program. However, progress in this area has been slow and the effectiveness of these measures had yet to be realized.

The team observed a weakness with respect to management reinforcement of standards associated with the use of plant operating procedures. It was observed that during the preparations to reduce power to repair a leak on the heater drain pump, that plant management believed that the abnormal operating instruction (AOI 21.1.1) for the loss of the drain pump provided an adequate basis for the ultimate power level to be achieved. However, the AOI guidance conflicted with the more conservative guidance contained in plant operating procedure (POP) 3.1 which governed a plant load decrease.[15] The team observed control room discussions concerning which procedure should be used. Ultimately, after discussions with the Chief Nuclear Officer, the licensee determined that the power should be reduced in accordance with POP 3.1. However, a night order written that evening to the plant operators suggested that it would have been acceptable to have terminated the load reduction at 900 MW. The team determined that the guidance in the abnormal operating instructions, while suggesting that an acceptable basis for the power level may exist at 900 MW, did not necessarily establish the most desirable plant conditions to conduct corrective maintenance. Rather, the abnormal operating instructions were written to place the plant in a safe and stable configuration from which additional actions and assessment can be made. The team determined that the management standards regarding the use and adherence to procedures were weak in this case. The team noted an additional weakness in that the planning and discussions associated with this evolution were concentrated in the control room versus being planned by engineering and maintenance with operations support.

In general, the command and control function in the control room was adequate. However, the team observed several problems in this area. For example, the team noted in one instance that shift management had difficulty prioritizing actions in response to multiple, simultaneous alarms. In another instance, the operating crew was not aware

[15] AOI 21.1.1 would lead to a power level of 900 MW whereas POP 3.1 would have led to a level of 650 MW

of post-maintenance testing being conducted. Additionally, during the start of a main boiler feedwater pump (MBFP), the control room supervisor exhibited weak operational oversight of activities when he became directly involved in the restart of the pump rather than directing overall activities.

On one occasion, the control room operators and maintenance personnel did not display conservative actions following erratic behavior of the main feedwater pump control system. On January 21, 2001, the 'B' MBFP flow oscillated and the 'A' MBFP control system and pump responded accordingly. Operators promptly placed the 'B' MBFP control system in manual, which stabilized the flow oscillations. On January 22, the team observed that the 'B' MBFP had been returned to automatic. When questioned, the operators stated that no troubleshooting work had been performed and the suspected control system inputs had not been instrumented. The operators felt that if the flow oscillations occurred again, they would be able to quickly respond. A second flow oscillation occurred the evening of January 23. System traces were not available to evaluate the pump's response or to positively identify the cause of the flow oscillation. Subsequent troubleshooting isolated the suspected channel but the failure to instrument the channel represented a missed opportunity and demonstrated the willingness of operators to accept a potential operational challenge.

During the 24 hour continuous control room coverage, a period when the plant was engaged in power ascension activities, minimal senior station management presence was observed in the control room. Lack of management involvement in control room activities had been identified in previous licensee self-assessments and NRC inspection efforts.

The team also observed during the control room observations that maintenance personnel suggested a potentially disadvantageous approach to repairing a service water leak on the generator hydrogen cooler. The recommended approach involved introducing a vulnerability of losing the only inservice hydrogen cooler, increasing the probability of a plant shutdown. After discussions between the operating crew and maintenance personnel, the crew conservatively determined that the alternate cooler should be placed in service prior to maintenance. The control room staff effectively managed the risk of the evolution. However, poor maintenance planning in this instance resulted in additional burden on the control room operating crew.

Problems in control room logkeeping were noted for the 1999 reactor trip with complications, the 2000 tube failure, the fall 2000 operator requalification inspection, and the recent turbine trip. It was again noted during the continuous control room coverage that the operating logs in the control room do not consistently contain an appropriate level of detail to allow a reconstruction of many operational activities.

In most cases, licensed operators were observed to use self-checking and peer checking in both the simulator and the control room. However, one instance was noted in which the balance of plant operator did not self-check during a valve manipulation. Instead of waiting for the valve to fully stroke, the operator walked away while the valve was in mid-stroke.

On one occasion, weak teamwork was exhibited by a shift crew when repeated alarms for a failed main steam line radiation monitor occurred simultaneously with repeated

alarms associated with an in-progress post-maintenance test. These simultaneous alarms challenged the crew's effectiveness in prioritizing their actions to respond. In addition, the performance of the post-maintenance testing was not communicated to the crew, further contributing to the confusion. Also during this period, the crew was visibly frustrated with respect to a separate issue related to the power ascension ramp rate. The reactor engineer's instructions were to increase power at a maximum rate of 3% per hour. Some crew members wanted to be more conservative and proceed at a rate of about 2%. The shift manager, however, informed the crew that they were being overly conservative and the reactor engineer's instructions were meant to be an average ramp rate versus a maximum rate. This disagreement was eventually settled and discussed during the pre-evolution brief for the power ascension.

Several instances of a weak accounting of the status of ongoing evolutions were observed. For example, it was noted that place keeping within active procedures was not consistently conducted. During the power ascension it was not apparent which actions in SOP 21.1, "Main Feedwater System," had been completed. For example, several pages had missing signoffs and other pages were incomplete with respect to the steps which had been completed.

2. Training and Qualification

a. Inspection Scope

The team verified the training and qualifications of station personnel with respect to the level of work assigned. The team conducted observations of training using the guidance and checklists found in NUREG-1220 Rev. 1, "Training Review Criteria and Procedures." The team conducted interviews of trainees, supervisors, and instructors. The team assessed whether personnel were able to evaluate hypothetical conditions or data, identify respective emergency action levels, evaluate or perform dose calculations, classify emergencies, and recommend appropriate protective actions. Personnel were interviewed to determine their awareness and understanding of procedure changes, and whether they had received adequate training for their use.

b. Findings

Interviews were conducted with plant operators with respect to the quality of the site training program. Many operators stated that they believed that licensed operator continuing training was improving. Many of the operators noted that, while the overall industry operating experience level of the licensed instructors was good, the site specific experience level of the instructors warranted improvement.

The licensee had issued SL1 CR 200004471 as result of an adverse trend in the quality of nuclear training lesson plans. This trend was identified when initial licensed operator training was rescheduled due to inadequate lesson plans. The team reviewed the condition report and associated root cause assessment. It was determined that the overall assessment was adequate and that the corrective actions identified, if properly implemented, should address this significant issue. The actions planned to improve the lesson plans were scheduled for March and August 2001. Additionally, the team reviewed the licensee's assessment of the 2000 operator requalification examination. The licensee's evaluation included a root cause assessment of examination

performance difficulties. The team concluded that the root cause assessment appeared to be adequate and that the corrective actions, if properly implemented, should address issues related to improving the fundamental knowledge level of the licensed operators. The licensee indicated that a review of the effectiveness of the actions taken will be conducted during the next licensed operator requalification examination.

A third party assessment of the simulator was conducted in March 1999 using the criteria in ANSI/ANS-3.5-1985, "Nuclear Power Plant Simulators for Use in Operator Training." The conclusion of the assessment was that the simulator appeared to meet the requirements of the standard. Five weaknesses related to the simulator were identified and entered into the condition reporting system. Four of the five condition reports had been satisfactorily completed. The actions for the fifth weakness associated with the computer were in progress.

The fuel handler's training provided to licensee personnel during the Fall 2000 outage was evaluated by the team. The training program included the refuel equipment course conducted by Westinghouse training and operational services at the Waltz Mills facility. The refuel equipment course was the same course for licensee and Westinghouse personnel and was conducted at the same facility, using the same course materials and instructors. In addition to the refuel equipment course, the fuel handler's training program included site-specific crane training and qualification, based on the existing site crane operator training program. As part of the site-specific training, the fuel handler candidates completed a spent fuel tool, bridge crane, and upender refueling operator qualification guide containing three tasks and two refueling job performance measures. The three tasks were "operate the fuel storage building bridge crane," "operate the spent fuel handling tool," and "operate the upender." The two job performance measures involved moving dummy assemblies and operation of the upender. The fuel handler training program was designed using systems approach to training techniques and should ensure that employees are satisfactorily qualified to safely move and handle nuclear fuel.

3. Communications

a. Inspection Scope

The team assessed the quality of communications and whether communications were consistent with the licensee's procedures during the conduct of operations, maintenance, and testing activities. The team also evaluated the communications between various site departments and licensee management.

b. Findings

The team observed that overall crew communications were adequate. In most cases, operators announced expected and unexpected alarms, used three-way and, when appropriate, two-way communications. During the power ascension, communications between the control room supervisor and the operator at the controls were adequate.

The quality of pre-job and pre-evolution briefings was mixed but the briefings generally described expected indications and potential problems that could be encountered during the evolution.

4. Control of Overtime and Fatigue

a. Inspection Scope

The team reviewed the process for controlling overtime. Interviews were conducted with personnel who had worked overtime to determine how management ensures that personnel are not assigned to safety related duties while in a fatigued condition. A review of records was conducted to identify indications of recurrent or routine use of overtime.

b. Findings

The hours worked for operations personnel were reviewed. The team noted that while there did not appear to be an excessive use of overtime, that several instances of both planned and unplanned deviations from the overtime policy had occurred in recent months. During the continuous control room coverage, two operator trainees were observed to have worked a significant amount of overtime in order to acquire needed qualification requirements. A review of the audits conducted in calendar year 2000 through September 16, 2000, did not identify any working hour deviations that were not approved.

5. Human System Interface

a. Inspection Scope

The team conducted an evaluation of human-system interfaces, including work area design and environmental conditions. During both the control room coverage and simulator observations, the team walked down control panels and evaluated displays, controls, and alarms. The team assessed whether panels and equipment were correctly labeled and evaluated work areas.

b. Findings

The team did not identify any human-system interface problems with control room displays, controls, and alarms.

D. Emergency Preparedness

1. Problem Identification and Resolution

a. Inspection Scope

The team evaluated the effectiveness of corrective actions for emergency preparedness (EP) performance issues to determine whether identified problems were appropriately reviewed, prioritized, and resolved in a technically adequate and timely manner. The review included an assessment of 120 action items in the licensee's condition report system, QA audit report No. 00-05-A, and various self-assessments and exercise reports. In addition, interviews were conducted with the EP Manager and individuals responsible for overseeing the corrective action program within the EP group.

b. Findings

The team found that the licensee was self-critical of the EP program and had generated a number of condition reports to address identified performance issues. In particular, a number of thorough self-assessments were generated following the February 15, 2000, steam generator tube failure event. With respect to the overall program for identifying and correcting deficiencies in the EP area, the team determined that most condition reports were concise and well-written and that corrective actions had been appropriately specified. However, the team found several examples where the condition report responses were not sufficiently descriptive, or did not describe the actual corrective action taken.

The team reviewed surveillance test records for the Emergency Response Data System (ERDS) and found the system was operable in the 2nd and 3rd quarter of 2000. However, the system was found inoperable during an exercise in November 2000, and also during a test conducted in the 1st quarter of 2001. The system engineer stated that the cause of this failure was that the modem assigned to the ERDS had been borrowed and reconfigured prior to both tests. The NRC conducted an ERDS test during the inspection and found both the system and the backup to be operable. However, the team noted there were no procedures for activating the backup system. The licensee generated CR 200100964 to address this issue. Overall, the team concluded that the corrective actions taken as a result of a drill deficiency were inadequate to prevent a recurrence with respect to the failure of the ERDS. The finding was determined to have very low safety significance (Green) because the licensee retained capability to communicate via the telephone system. 10 CFR 50.54(q) states that licensees will follow and maintain in effect an E-Plan which meets the planning standards of 10 CFR 50.47(b) and the requirements of 10 CFR Part 50, Appendix E. This is considered a Severity Level IV violation of 10 CFR 50.47(b)(14), which states that deficiencies identified during a drill/exercise will be corrected. This violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy, issued May 1, 2000 (65FR25368) **(NCV 05000247/2001-002-007)**.

The team noted that the licensee was responsive in resolving most identified issues. However, in some cases the licensee was not effective in diagnosing the underlying causes for the problems to prevent recurrence. Some examples of this included the ERDS issues discussed above and issues involving qualification lapses in the emergency response organization. Additionally, the licensee had identified several deficiencies in exercises that appeared to be repetitive (section D.5). The corrective actions focused on conducting an additional exercise, post-exercise critiques and lessons learned with emergency response organization emergency facility leads. However, the actions did not include an assessment of, for example, the effectiveness of training for resolving these issues, qualifications of the responders, or lessons-learned from discussions with the affected individuals.

During drills conducted in the past two years, the licensee consistently identified problems with the site public address system. After several attempts by EP to have engineering address this issue, a contingency measure was established to use a bullhorn in areas determined to be inaudible. The licensee indicated that the system needed to be upgraded and that repairing the system had not been considered a priority and entered into the corrective action system. While the EP work around was an adequate temporary corrective action, the team considered the continual delays by engineering to fix this issue a weakness.

The team identified a weakness with respect to the process for conducting the 2000 nuclear quality assurance audit in the emergency planning area. The team determined the audit report met the 10 CFR 50.54(t) requirements; however, the licensee did not maintain checklists for the team to verify the conduct of the audit and for supporting the conclusions in the audit report. In addition, the audit report did not include an assessment of the adequacy of corrective actions for previously identified deficiencies listed in the corrective action system. The team concluded that due to the number of emergency planning weaknesses in the past year, an independent assessment of ongoing corrective actions would have been appropriate.

Interviews with the EP manager indicated that he was knowledgeable of the corrective actions taken for identified performance issues. However, an EP staff member was delegated the responsibility for maintaining the condition reporting system. The site corrective action program manager stated that the use of a “surrogate” is considered to be an acceptable practice at the site. However, the EP manager did not routinely review the narrative of how condition reports were closed. This issue is considered a weakness and was entered into the licensee’s corrective action system (CR 200101416) for resolution.

2. Emergency Response Staffing

a. Inspection Scope

The team reviewed the licensee’s emergency response organization to ensure the minimum on-shift staffing met the applicable regulatory requirements and that staffing was sufficient to fill positions needed in the emergency facilities. The team also reviewed drill records and call-in procedures to determine if augmentation and off-hour drills were held as required by the E-Plan, whether augmentation goals were met, and that off-shift

personnel were available if needed. In addition, interviews were conducted with emergency response organization responders to verify their understanding of the call-out process and their responsibilities for reporting to their facilities during an event.

b. Findings

The team verified that the emergency response organization assignment roster met the minimum on-shift staffing requirements as stated in the E-Plan. Key positions were divided into three teams with most positions having alternates as additional backups. Although the licensee designated a team per week to be on-call, they required all teams to report during an event to ensure complete coverage. Weekly pager tests were performed for the on-call team. A review of records indicated acceptable pager performance. The licensee conducted an unannounced off-hours augmentation drill in April 2000 and met the 60 minute requirement in all emergency facilities. The licensee had been conducting off-hours testing of a new automated dialer system (section D.4), and test records indicated that they would have been able to fill all key positions should there have been a real event. The EP manager stated that an unannounced off-hours drill would be conducted in 2001 to further verify that changes made to the notification system were adequate. During the planned drill, the ability to staff the Joint News Center will also be verified. Interviews with individuals who were recently added to the emergency response organization indicated they were knowledgeable of the call-out process and understood their responsibilities during an event.

3. Emergency Plan and Procedure Quality

a. Inspection Scope

The team performed a review of E-Plan changes since June 2000 to determine if any changes had decreased the effectiveness of the plan. In addition, a review of the plan's implementing procedures relative to the significant planning standards was performed. The team evaluated the 10 CFR 50.54(q) review documentation and applicable procedures to assess the adequacy of the method for reviewing the E-Plan and implementing procedure changes.

b. Findings

The team noted an instance where the licensee's review of changes made to the E-Plan and implementing procedures was not thorough. The issue involved a change to implementing procedure IP-1035, "Technical Support Center," Attachment 2. The change stated that prior to activation, a minimum staffing level of three individuals was required. This change appeared to contradict the E-Plan which stated that a minimum staffing level of seven people was needed for activation. The licensee continued to commit to the 60-minute activation staffing level (seven people), as set forth in the E-Plan. However, the licensee stated that the intent of IP-1035, was that a minimum of three people could begin to assist the control room. The licensee acknowledged that the word "activation" may have been misused in the implementing procedure relative to its use in the E-Plan. This issue was entered into the corrective action system (CR 200100813) and the discrepancy was corrected.

4. Emergency Facility Equipment

a. Inspection Scope

The team reviewed surveillance test records and maintenance procedures for offsite sirens, emergency pagers and communication equipment to determine if the tests were performed in accordance with regulations and E-Plan commitments. In addition, the team conducted an inventory of the emergency equipment located in the emergency facilities using the appropriate inventory checklists.

b. Findings

The team found a number of discrepancies with respect to the equipment inventories. These included: (1) five radiological instruments were out of calibration at the Emergency Operations Facilities (EOF); (2) the monthly inspection of full face respirators was not conducted in April and June 2000; (3) a radiological instrument located in one of the field kits had low batteries, and no batteries were found in the kit; (4) an expired calibration sticker on a meter was not replaced when calibrated the previous month; and, (5) inventory lists were not updated to reflect the addition of several radiological check sources.

According to Section 8.3 of the E-Plan, facility inventories are to be conducted on a quarterly basis. The licensee could not provide inventory records for the third quarter nor verify that those inventories were actually conducted. The EP manager stated that due to limited resources, the responsibility for conducting the inventories was given to another department within the past year. The team concluded that the emergency planning organization was not proactive in making sure the inventories were being conducted and properly documented. These issues were entered into the corrective action system (CR 200100815) and out-of-calibration instruments were immediately replaced. The team considered this issue to be of very low safety significance (Green) because notwithstanding the discrepancies which were identified, the licensee had sufficient resources in the facilities to properly respond to an event. 10 CFR 50.54(q) states that licensees will follow and maintain in effect an E-Plan which meets the planning standards of 10 CFR 50.47(b) and the requirements of 10 CFR Part 50, Appendix E. This is considered a Severity Level IV violation of 10 CFR 50.54(q) and the licensee's E-Plan, Section 8.3 which states that quarterly inventories will be conducted. This violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy, issued May 1, 2000 (65FR25368) **(NCV 05000247/2001-002-008)**.

In July 2000 the licensee's system performance group began an extensive initiative to address emergency response organization pager problems. These actions included: (1) evaluation of the current vendor for compatibility; (2) consolidation of pagers under one vendor; (3) installation of a repeater system to ensure pager operability in "dead" zones; and, (4) establishment of specific testing criteria. The work was completed by October 2000, and since that time, weekly pager test records indicated significant improvements in reliability. The licensee had installed and was testing an automated telephone system which would backup the pager system by simultaneously telephoning responders. The responders would call back the system which would log and track the number of responders needed to fill ERO positions. The licensee stated that this system would be operational by April 1, 2001.

Finally, the inspectors noted that Section 8.1.3 of the E-Plan stated that emergency communication links between facilities will be operationally checked on a quarterly basis. The communication tests would include the dedicated NRC communication links used in each facility. The team reviewed communication records for the year 2000 and found that the licensee was not able to produce the 3rd quarter records and could not verify that the required tests had been conducted. This issue was entered into the licensee's corrective action system (CR 200101776). The team determined this issue to be of very low safety significance (Green) because the licensee had installed spare operable telephone lines. 10 CFR 50.54(q) states that licensees will follow and maintain in effect an E-Plan which meets the planning standards of 10 CFR 50.47(b) and the requirements of 10 CFR Part 50, Appendix E. This is considered a Severity Level IV violation of 10 CFR 50.54(q) and Section 8.1.3 of the E-Plan. This violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy, issued May 1, 2000 (65FR25368) **(NCV 05000247/2001-002-009)**.

5. Emergency Response Organization Performance

a. Inspection Scope

A review was conducted of the licensee's training program to ensure it was in compliance with the applicable regulations and the E-Plan. The team reviewed the following: (1) EP-AD-03, "ERO Training Program"; (2) various lesson plans; (3) conduct of training; (4) experience and qualifications of instructors; and (5) ERO qualification training records. The team also conducted interviews and observed training to identify any observed weaknesses. In addition, the team reviewed reports for several recent training exercises to determine the adequacy of training and the ability to identify and correct exercise deficiencies in a timely manner.

The team evaluated four mini-evaluation drills of simulated events that tested the performance of key members of the emergency response organization in understanding their assignments, responsibilities and authority. These drills provided an independent assessment of the licensee's capabilities to make and assess emergency classifications, dose assessment calculations and protective action recommendations (PAR). In addition, the team reviewed the documentation generated as a result of the exercises and evaluated the licensee's critique process.

b. Findings

The team observed that the licensee had recently revised their training program. The revision included procedure and exam development, classroom training, and a tracking process for qualifications. However, the team found that the program procedure did not describe if a drill or exercise was needed for initial qualifications or for requalification. Additionally, the procedure lacked specificity regarding the tracking of deficiencies.

The team reviewed the critique comments from classroom training conducted in December 2000 and found that while the comments were primarily administrative in nature, several had some technical significance. For example, comments involved confusion with terminology, questions on activation, request for additional practice for making classifications, and confusion regarding what procedures are current (versus changes expected to be made). The team further noted that there was no formal

mechanism for reviewing critique comments and documenting their resolution. The team concluded that this represented a weakness with respect to documenting and tracking training issues.

The team interviewed a number of staff in key emergency response organization positions. There was a consensus that training had improved and that the EP staff were receptive to critical feedback and program enhancement suggestions. The team also observed an operations support center facility walkthrough class and noted the instructor was knowledgeable of the facility. The team further observed that the training appropriately emphasized the use of procedures and that the participants were actively involved in the training session.

The team reviewed qualification records and the training matrix listed in the licensee's administrative procedures. Overall, the team found that emergency responder qualifications were current. However, ten individuals assigned to the offsite and onsite monitoring teams had let their respirator qualifications lapse. It was determined that there was confusion between the EP and the health physics organizations regarding the necessity for maintaining respirator qualifications for emergency responders. Upon further review, the EP manager determined that all individuals that would be expected to wear respirators must be respirator qualified. This issue was entered into the licensee's corrective action system (CR 200100290) and at the end of the inspection the issue had been resolved. The team determined this issue to be of very low safety significance (Green) because there were sufficient responders with respiratory qualifications to fill the positions. 10 CFR 50.54(q) states that licensees will follow and maintain in effect an E-Plan which meets the planning standards of 10 CFR 50.47(b) and the requirements of 10 CFR Part 50, Appendix E. This is considered a Severity Level IV violation of 10 CFR 50.54(q) and E-Plan Section 8.1.2 of the licensee's E-Plan which describes the qualifications necessary to maintain proficiency as an emergency responder. This violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy, issued May 1, 2000 (65FR25368) **(NCV 05000247/2001-002-010)**.

Since the June 2000 NRC evaluated exercise, the licensee conducted four exercises[16] with the "blue" and "red" emergency response teams. The exercise reports were found to be self-critical and had identified areas for improvement. The NRC team trended the deficiencies identified in the four exercise reports and found repetitive issues in the exercises that were reflective of past performance, particularly in the area of plant assessment and the dissemination of the information to the general public.

[16] August, November (2), and December 2000

The team reviewed the condition report generated following the August 2000 exercise and found it to be descriptive; however, the corrective actions were general, simply indicating that more exercises were needed and lessons learned should be discussed with the facility leads. In this case, the affected team had one additional exercise and the lessons learned discussion was not performed until November. The condition reports associated with the second exercise did not capture the deficiencies in the joint news center and the corrective actions were only generally described and not pertinent to all the significant issues. The licensee provided two lesson plans for classes conducted in November 2000 and the instructor notes indicated some of the repetitive issues were addressed, but the classes were limited to only the facility leads and not the organization as a whole. Further, the team noted that the licensee did not retain any original player or controller comments, or trend and assess exercise performance. The emergency planning organization expressed their belief that significant improvement in the TSC has been observed, but that other facility personnel were not fully aware of the improvements and tend to be overly critical. However, the team noted that irrespective of the adequacy of the TSC, that a lack of confidence on the part of other key organizations could limit the effectiveness of the TSC.

While it appears the licensee implemented some corrective actions, the team determined that the licensee's training program was not fully effective in preventing recurrence of issues to ensure consistent emergency response organization performance. The team determined this issue to be of very low safety significance (Green) because these performance issues did not deal with the risk significant planning standards (classifications, notifications, PARs). The licensee entered this issue into the corrective actions system (CR 200101775). 10 CFR 50.54(q) states that licensees will follow and maintain in effect an E-Plan which meets the planning standards of 10 CFR 50.47(b) and the requirements of 10 CFR Part 50, Appendix E. Section 8.1.2 of the licensees E-Plan states a training program is established to train employees and exercising, by periodic drills to ensure that employees maintain the proficiency of their specific emergency response duties. This is considered a Severity Level IV violation of 10 CFR Part 50.54(q) and Appendix E.IV.F.2.g for inadequate training. This violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy, issued May 1, 2000 (65FR25368) **(NCV 05000247/2001-002-011)**.

The team observed and evaluated the licensee’s performance in response to two drills and four separate scenarios. The licensee used a limited emergency operations facility staff and simulated support from the technical support center to conduct the drill. The scenarios both required an upgrade to the protective actions recommendations due to a wind shift in one case, and increased radiological release in another. Dose assessment calculations were performed with the two shift managers and their control room supervisors and was independent of the training class. The team determined that the licensee effectively evaluated plant conditions and the emergency classifications. The required notifications and protective actions recommendations were accurate and timely. The licensee conducted an adequate critique of each performance and identified areas for improvement.

6. Emergency Preparedness Off-site Interface

a. Inspection Scope

The team evaluated the licensee's interface with off-site state and county agencies. This included a review of documentation of off-site state and county meetings, letters of agreement with offsite organizations and training drills. Also, the team conducted telephone interviews with the lead contacts from the New York State Emergency Management Agency, Orange County Office of Emergency Management, Rockland County Office of Fire and Emergency Services, Westchester County Office of Emergency Management and the Putnam County Office of Emergency Management.

The team reviewed documentation of radiological orientation training provided to the media as required by the regulations and the E-Plan. An interview was conducted with the site communications manager regarding the status of corrective actions from deficiencies identified during the Alert Event on February 15, 2000, and the June 1, 2000, exercise at the joint news center.

b. Findings

Following the steam generator tube failure event of February 15, 2000, the licensee has met with state and county officials on numerous occasions to gain a better understanding of their needs and requirements. While expressing concerns about the extent of past overall communications, most of the state and county officials indicated that the licensee has made an effort to improve communications and address their needs with respect to emergency preparedness. The team verified that all required offsite training and drills had been conducted and that letters of agreement for offsite assistance were current. The team also observed that the licensee conducted the required annual training session for the local media as required in Section 8.4 of the E-Plan.

E. Conclusions Regarding Performance in the Reactor Safety Strategic Performance Area

The team determined that overall performance was acceptable in the reactor safety strategic performance area. However, a number of issues were identified in the areas of design control, procedures, equipment and human performance, and emergency preparedness which indicated weaknesses in these areas as well as the need for continued improvement. The issues identified by the team have, individually, been evaluated under the risk significance determination process as being minor in nature or having very low safety significance (Green). However, the issues provide evidence of some program and process weaknesses similar to those which contributed to previous plant events.

In the design control area, the team identified several examples of performance issues related to weaknesses in translating important design assumptions into plant operating procedures, drawings, calculations, and testing programs. These examples point to weaknesses in the design control process which indicate the need for continued improvement in this area. Additionally, the team observed that there appeared to be difficulties in retrieving design basis information necessary to support design control,

testing and plant modification efforts. This issue had been previously identified and slow progress has been made to improve in this area. Notwithstanding the performance issues identified, the team determined that while weaknesses, some of a longstanding nature, existed in the design control area, that the 480 Vac/emergency diesel generator and service water systems were capable of performing their safety functions.

In the area of procedures, the team found that while overall procedure quality was adequate, performance weaknesses in both procedure quality and usage existed at the facility. The team found deficiencies related to procedure clarity, consistency, and accuracy in administrative and implementing procedures. The team also noted that flexible guidance in some administrative procedures allowed for wide variation in procedure use and interpretation and there were several instances where the team identified that design, vendor, or modification information was not properly translated into procedures.

In the area of equipment performance, the team determined that the reliability, material condition and overall performance was acceptable for the systems which were reviewed. However, a number of equipment issues were observed which presented challenges to both the plant as well as the operators. It was observed that emergent equipment failures in secondary plant systems continue to challenge the plant operators and require plant power changes. The team also noted a decrease in reliability and a concurrent increase in unavailability of the gas turbine generators which appeared to be partly attributable to a decrease in the emphasis on maintenance for this equipment. Finally, the team noted that the station work backlog continued to pose a significant challenge to the station. It was also determined that a number of important work items had not been accurately captured in the accounting for the backlog, indicating that the backlog may be somewhat larger than stated.

In the area of human performance, the team noted an increased emphasis on overall improvement and a recognition of the need for an improved training program. However, a number of program and process issues were identified. In particular, a challenge existed with respect to the number of licensed operators which posed complications with respect to overall scheduling and overtime considerations. The team observed that there was a management recognition of this problem and that steps have been undertaken to increase the number of licensed operators. The team also observed that operator performance issues have contributed to recent events and that some performance problems continue to occur. Specifically, performance errors were observed in the August 1999 reactor trip, February 2000 steam generator tube failure and as recently as the January 2001 turbine trip. Additionally, inconsistencies continue to exist with respect to procedural quality and adherence, owing, in large measure, to inconsistent reinforcement of management expectations in this area. However, the team did observe that during the inspection, overall crew performance was acceptable, and in particular, crew communications were good, indicating some improvements.

In the area of emergency preparedness, the team determined that the overall program was adequate and provided reasonable assurance that the emergency response organization could respond effectively to an emergency. Additionally, while issues were identified that indicated the need for continued improvement, improvements were noted in a number of previously identified problem areas. Notwithstanding the improvement which was observed, the team concluded that the remediation for some of the previously identified performance issues in the technical support center, emergency operations facility and joint news center had not been fully effective. The team acknowledged that although some corrective actions had been implemented, the licensee's training program has not been fully effective in preventing the recurrence of issues to ensure consistent emergency response organization performance. However, risk significant planning standards continue to be met.

3. Root and Contributing Cause Assessment

The team, in accordance with Inspection Procedure 95003, integrated the inspection findings, with the results of similar, previous efforts in order to provide insight into the upper level causes of performance issues at the site. It should be noted, however, that this effort was not intended to be a substitute for a more focused root cause study or self-assessment by the licensee.

The team identified four specific causes:

- Inconsistent management application and reinforcement of existing standards with respect to staff performance, particularly in the areas of procedural quality and adherence and in implementation of the corrective actions programs.

- Weaknesses existed with respect to the ability to retrieve, verify, and assure the quality of engineering products, particularly design basis information. These weaknesses contributed to problems in developing and validating calculations, testing methodologies and acceptance criteria.

- The plant staff tended to accept degraded conditions. This was true of both equipment and documentation issues. However, it was noted that improvement has been made in this area, in particular, the increased emphasis on problem identification.

- A number of performance problems may have been influenced by resource issues. In particular staffing issues (in operations and instrumentation and control) and training resources.

4. Management Meetings

Exit Meeting Summary

The team conducted a detailed debriefing with the licensee on February 15, 2001.

An exit meeting, open for public observation, was conducted on March 2, 2001, at the Cortlandt Town Hall, Cortlandt, New York. The inspection results were presented to Mr. J. Groth and other members of the licensee staff who acknowledged the findings. This exit meeting was followed by a public question and answer session with elected officials and members of the public.

ITEMS OPENED, CLOSED AND DISCUSSED

Opened And Closed During This Inspection

05000247/2001-002-001	NCV	10 CFR 50 Appendix B, Criteria XVI, Corrective Action
05000247/2001-002-002	NCV	10 CFR 50 Appendix B, Criteria III, Design Control
05000247/2001-002-003	NCV	Technical Specification 6.8.1, Procedures
05000247/2001-002-004	NCV	10 CFR 50 Appendix B, Criteria V, Instructions, Procedures, Drawings
05000247/2001-002-005	NCV	10 CFR 50.55.a, Inservice Testing
05000247/2001-002-006	NCV	10 CFR 50.65(a)(1), Maintenance Rule
05000247/2001-002-007	NCV	10 CFR 50.47(b)(14), EP Drill Deficiencies
05000247/2001-002-008	NCV	10 CFR 50.47(b)(8), Emergency Equipment
05000247/2001-002-009	NCV	10 CFR 50.54(q), E-Plan 8.1.3, Communication Tests
05000247/2001-002-010	NCV	10 CFR 50.54(q), E-Plan 8.1.2, Emergency Responder Proficiency
05000247/2001-002-011	NCV	10 CFR 50.54(q), Appendix E.IV.F.2.g, Inadequate Training

TABLE I
INDIAN POINT 2 RADIOCHEMISTRY TEST RESULTS

SAMPLE	RADIONUCLIDE	NRC VALUE	Con Ed VALUE	COMPARISON
Liquid Radwaste 0945 hrs 2-8-01 (Detector NUC3) (Results in microCuries per milliliter)	Co-60 Cs-137 Co-58 Sb-125	(2.81±0.09) E-6 (6.00±0.10)E-6 (1.76±0.08)E-6 (2.62±0.04)E-5	(2.71±0.10) E-6 (5.81±0.11)E-6 (1.81±0.07)E-6 (2.60±0.04)E-5	Agreement Agreement Agreement Agreement
Reactor Coolant Particulate Filter (Crud Filter) 1200 hrs 1-31-01 (Detector NUC3) (Results in microCuries per milliliter)	Co-60 Co-58 Mn-54 Cr-51 Zr-95 Sb-124	(3.62±0.02)E-4 (5.16±0.02)E-4 (3.74±0.09)E-5 (1.522±0.008)E-3 (1.158±0.016)E-4 (6.6±0.6)E-6	(3.50±0.03)E-4 (5.04±0.03)E-4 (3.85±0.16)E-5 (1.553±0.014)E-3 (1.15±0.03)E-4 (6.1±0.7)E-6	Agreement Agreement Agreement Agreement Agreement Agreement
Reactor Coolant (First Count) 0828 hrs 2-8-01 (Detector NUC2) (Results in microCuries per milliliter)	I-132 I-133 I-134 I-135	(1.46±0.06)E-3 (7.8±0.3)E-4 (2.41±0.11)E-3 (1.50±0.14)E-3	(1.54±0.07)E-3 (8.3±0.7)E-4 (3.14±0.10)E-3 (1.80±0.16)E-3	Agreement Agreement Agreement Agreement
Reactor Coolant (Second Count) 0828 hrs 2-8-01 (Detector NUC2) (Results in microCuries per milliliter)	I-131 I-132 I-133 I-135	(1.1±0.2)E-4 (1.8±0.2)E-3 (7.9±0.2)E-4 (1.82±0.14)E-3	(9±2)E-5 (1.52±0.16)E-3 (8.7±0.3)E-4 (1.7±0.2)E-3	Agreement Agreement Agreement Agreement

SAMPLE	RADIONUCLIDE	NRC VALUE	Con Ed VALUE	COMPARISON
Waste Gas Decay Tank 1409 hrs 2-8-01 (Detector NUC2) (Results in microCuries per milliliter)	Xe-133 Xe-135	(2.63±0.03)E-5 (1.68±0.06)E-6	(2.48±0.04)E-5 (1.62±0.06)E-6	Agreement Agreement
Plant Vent Charcoal Cartridge 1235 hrs 2-7-01 (Detector NUC2) (Results in microCuries per milliliter)	I-131 I-133	<6E-13 <1E-12	<9E-13 <1E-12	No comparison, no radionuclides were detected in this sample.
Plant Vent Particulate Filter 0948 hrs 2-6-01 (Detector NUC2) (Results in microCuries per milliliter)	Co-60 I-131 I-133	<1E-13 <9E-14 <7E-13	<2E-13 <2E-13 <8E-13	No comparison, no radionuclides were detected in this sample.
Air Ejector 1308 hrs 2-7-01 (Detector NUC3) (Results in microCuries per milliliter)	Kr-85 Xe-133 Xe-135	<6E-6 <6E-8 <3E-8	<1E-6 <9E-9 <4E-9	No comparison, no radionuclides were detected in this sample.

SAMPLE	RADIONUCLIDE	NRC VALUE	Con Ed VALUE	COMPARISON
Steam Generator Blowdown (Water) 0900 hrs 2-7-01 (Detector NUC2) (Results in microCuries per milliliter)	Mn-54 Co-58 Co-60 I-131 I-133 Cs-137	<8E-8 <8E-8 <1E-7 <9E-8 <9E-8 <1E-7	<9E-8 <9E-8 <1E-7 <6E-8 <7E-8 <9E-8	No comparison, no radionuclides were detected in this sample.
Service Water 0900 hrs 2-9-01 (Detector NUC3) (Results in microCuries per milliliter)	Mn-54 Co-58 Co-60 I-131 I-133 Cs-137	<9E-8 <8E-8 <1E-7 <9E-8 <8E-8 <1E-7	<2E-7 <5E-8 <1E-7 <1E-7 <1E-7 <2E-7	No comparison, no radionuclides were detected in this sample.

NOTE: Reported uncertainties are ± 1 Standard Deviation counting uncertainties for both NRC and licensee results.

ATTACHMENT TO TABLE I

CRITERIA FOR COMPARING ANALYTICAL MEASUREMENTS

This attachment provides criteria for comparing results of capability tests and verification measurements. The criteria are based on an empirical relationship which combines prior experience and the accuracy needs of the program.

In these criteria, the judgement limits are variable in relation to the comparison of the NRC Reference Laboratory's value to its associated uncertainty. As that ratio, referred to in this program as "Resolution," increases, the acceptability of a licensee's measurement should be more selective. Conversely, poorer agreement must be considered acceptable as the resolution decreases.

Resolution[1]	Ratio for Comparison[2]
<4	No Comparison
4 - 7	0.5 - 2.0
8 - 15	0.6 - 1.66
16 - 50	0.75 - 1.33
51 - 200	0.80 - 1.25
>200	0.85 - 1.18

1. Resolution = (NRC Reference Value/Reference Value Uncertainty)

2. Ratio = (Consolidated Edison Value/NRC Reference Value)

ATTACHMENT 1

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
● Initiating Events	● Occupational	● Physical Protection
● Mitigating Systems	● Public	
● Barrier Integrity		
● Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.

ATTACHMENT 2

LIST OF ACRONYMS USED

AAC	Alternate AC
AFW	Auxiliary Feedwater
AOI	Abnormal Operating Instruction
ARP	Alarm Response Procedure
ASSD	Alternate Safe Shutdown
CARB	Corrective Action Review Board
CCHX	Component Cooling Heat Exchanger
CCR	Central Control Room
CCW	Component Cooling Water
CFR	Code of Federal Regulations
COL	Check-Off List
CR	Condition Report
DBD	Design Basis Document
ECP	Employee Concern Program
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
FMEA	Foreign Material Exclusion Area
GT	Gas Turbine Generator
GPM	Gallons Per Minute
ICPM	Instrument & Controls Preventive Maintenance
IMC	Inspection Manual Chapter
IPE	Individual Plant Examination
KVA	Kilo Volt Ampere
KW	Kilo Watt
LOCA	Loss Of Cooling Accident
MCC	Motor Control Center
MOV	Motor Operated Valve
MPFF	Maintenance Preventable Functional Failure
MR	Maintenance Rule
NCV	Non-Cited Violation
OAD	Operations Administration Directive
P&ID	Piping and Instrumentation Diagram
PM	Preventive Maintenance
PMT	Post Maintenance Test
POP	Plant Operating Procedures
QA	Quality Assurance
RCS	Reactor Coolant System
SAO	Station Administration Order
SDP	Significance Determination Process
SGRO	Steam Generator Replacement Outage
SL	Significance Level
SOP	System Operating Procedures
SOV	Solenoid Operated Valve
SSC	Structures, Systems and Components
SW	Service Water

List of Acronyms (Cont.)

SWSOPI	Service Water System Operational Performance Inspection
TFC	Temporary Field Change
TOL	Thermal Overload
TP	Test Procedure
TPC	Temporary Procedure Change
UFSAR	Updater Final Safety Evaluation Report
VAC	Volts AC
VDC	Volts DC
VMI	Vendor Manual Index

ATTACHMENT 3

LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection, including documents prepared by others for the licensee. Inclusion on this list does not imply that NRC inspectors necessarily reviewed the documents in their entirety but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

Calculations/Studies/Engineering Analyses

NSL-EDG-900430A, Emergency Diesel Generator Fuel Oil Minimum Storage Requirements, Rev. 0
Con Edison study, "Update of the Indian Point Unit 2 Emergency Diesel Generator Loading Study," dated December 18, 2000
FEX-00152-00, Revision 0, 1/22/01, EDG Generator Ratings Analysis
Westinghouse Motor Company Engineering Report WMC-EER-90-005, dated October 23, 1990
FEX-00143-00, IP2 LOAD FLOW ANALYSIS OF THE ELECTRICAL DISTRIBUTION SYSTEM, 12/14/00
FEX-00120-01, Analysis of EDG Load Sequencing for Blackout & Unit Trip with and without an SI
FEX-00029-02, MINIMUM VOLTAGE ANALYSIS FOR INSTRUMENT BUSES 21 THRU 24 &21A THRU 24A, dated 2/3/98
FEX-00019-01, FEX-00020-01, FEX-00021-01, FEX-00022-01 INSTRUMENT BUS LOADING FOR INSTRUMENT BUSES
FEX-00025-02, Minimum Voltage Analysis for the Loads on Instrument Buses 21 & 21A, dated 2/3/98
EGE-00001-02, Indian Point - Class 1E Motor Minimum Starting Voltage and Acceleration Time Calculations, Rev. 2, 6/24/98
FEX-00101-00, revision 01, 4/21/00, 13.8 kV and 6.9 kV cable ampacity for primary and secondary leads of the new GT-1 transformer
125Vdc Protective Device Coordination Study No. SGX-00007-03 - Ebasco - Original, date 9/25/91, revision 3, approved 4/16/98
EPG-00006-00, Verify Adequacy of 480 Volt DB-50 Switchgear to interrupt Worst Case Short Circuit, Rev. 0, 9/5/91
SGX-00013-04, Setpoint Change for Undervoltage Relays on 480 Volt Buses 2A, 3A, 5A and 6A, Modification EGP-91-06786-E, Revision 4, dated 9/10/99
SGX-00004-00, Indian Point 2 - Calculate Fault Current at 480V Switchgear including 6.9 kV Motor Contributions, Rev. 0, 5-28-92
DA-EE-93-107-07, 480 Volt Coordination and Circuit Protection Study, Rev. 2
FFX-00822-01, Stress Analysis of Jacket Water Header for EDG JW Expansion Tank due to Replacement of Valve JW-5 (CR 200007667).
FMX-00107-00, EDG-JW/LOC Bundle Replacement - Seismic Evaluation.

Calculations/Studies/Engineering Analyses (Cont.)

MEX-00041-00, Seismic Evaluation of EDG Jacket Water and Lube Oil Coolers.
GMS-00014-01, Pipe Stress Analysis of Diesel Fuel Oil System to Determine if Piping is Over stressed due to Replacement of FO Valves to Day Tanks.
FFS-00131-00, Evaluation of Diesel Gen 21, 22 & 23 Air Compressors
FFX-00408-01, Evaluation of Diesel Generator Starting Air Line and "Supports Due to Installation of Hose at Motor.
FPX-00009-01, Installation of Check Valves in Discharge Lines from EDG 21, 22, and 23, Seismic Support Evaluation.
GCC-00155-00, Compressor Mounting in EDG Building - Seismic.
MMM-00014-00, IP Sluice Gate Flow, 1/29/92
PE-SW-910830A, SWP Submergence & NPSH, 8/30/91
PGI-00111-01, EDG JW and LO Heat Exchanger Tube Velocity, 3/10/95
(No document number),Update of the Indian Point Unit 2 Emergency Diesel Generator Loading Study, Final Report, Rev 0
Technical Report No. 97222-TR-28, Indian Point Unit 2 GL 98-13 Heat Exchanger Performance Assessment Program, Rev 1, June 2000
(No document number), Hydraulic Model Study of Service Water Intake by Alden research Laboratory, Inc., July 1994
PGI-00354, Generic Letter 89-13 Heat Exchanger Performance Assessment Program, Rev 1
PGI-00371-00, Service Water System Hydraulic Model, 7/29/98
MAA-00001, Service Water DBD Item 035, CFCU Outlet Flashing, Rev 00
FFX-00713, Evaluation of Service Water Strainer Minimum Blowdown Flow Through Throttled Valves, Rev 0
FFX-00300, Evaluation of Line 405, New & Existing Supports Due to t he Replacement of Valves SWN-35 & 35-1, Rev 2
FMX-00102, EDG Jacket Water Cooler & Lube Oil Cooler Performance, Rev 00
PGI-00162, 22 EDG Jacket Water Heat Exchanger Performance, Rev 0
PGI-00163, 22 EDG Lube Oil Heat Exchanger Performance, Rev 0
SMX-00005, FCU Service Water Flow Transmitter Replacements, Rev 1
FMX-00128, EDG-JWC/LOC Bundle Replacement: Vendor Thermal and Mechanical Design Calc., 4/29/99
GE Report NBR DER-1703, Emergency Diesel Flow Test, 9/19/91
RS-92, Service Water System Radiation Detector Alarm Set point, Rev 2
FEX-00003-00, Heat Trace of Lines 155, 161 and 181 for RWST, Rev. 0
EGE-00001-02, Class IE Motor Minimum Starting Voltage and Acceleration Time
EGE-00006-00, EDG Upgrade DB-75 and Switchgear Testing
EGE-00022-01, DB-75 Overload Capability During Degraded Voltage Conditions
EGP-00018-00, Service Water Improvement / Electrical Power Supply Ampacities
EGP-00027-00, Power Cable Ampacities for 480 VAC and 125 Vdc Systems
EGP-00110-00, Summary of Degraded Voltage Study
EGP-S36-001-00, EDG Bldg. Ventilation System Upgrade Control Panel Feeder Sizing
EGP-S36-002-00, EDG Bldg. Ventilation System Upgrade Ampacity & Voltage Drop
EPG-00006-00, Verify Adequacy of DB-50 Switchgear to Interrupt Worst Case Short Circuit

Calculations/Studies/Engineering Analyses (Cont.)

FCX-00421-00, Maximum Outside Ambient Air Temperature to Maintain 104°F Inside EDG Bldg.
FEX-00019-xx, 118VAC Instrument Bus Loading
FEX-00025-02, Minimum Voltage Analysis for Loads for Instrument Buses 21 &21A
FEX-00048-02, Minimum Voltage Analysis for 125 Vdc Power Panels
FEX-00066-00, Auxiliary Feedwater Pump Operability at 500 HP
FEX-00087-00, EDG 21, 22 & 23 KW Meter Accuracy
FEX-00139-00, EDG Loading
FEX-00143-00, Load Flow Analysis of the Electrical Distribution System
FEX-00148-00, Plant Startup with Pending EDG Load Study Revision
FEX-00152-00, EDG Generator Ratings Analysis
GMH-00006-00, Ventilation System for the EDG Building
SGX-00004-00, Fault Current at 480 Volt Switchgear Including 6.9 KV Motor
SGX-00005-00, EDG Bldg. Ventilation System Upgrade Protective Device Selection
SGX-00005-01, EDG Bldg. Ventilation System Upgrade Protective Device Selection
SGX-00013-04, Setpoint Change for Undervoltage Relays on 480 V Buses
SGX-00048-00, 480 V Protective Devices Coordination Review

Condition Reports

CR 199802561 Response to Information Notice 95-52
CR 199802596, 21EDG Took 17.5 Seconds to Come Up to Voltage
CR 199802858, 21EDG Failed to Start on Right Hand Air Start Motor
CR 199802979, 21EDG Air Start Motors Lack of Lubrication
CR 199803069, 21EDG Failed to Start Within Required Time
CR 199805606, Analysis of Service Water Header Cross-Tie Requires Procedure Revision
CR 199807295, ESW flow balance fails its acceptance criteria, 8/24/98
CR 199807530, 22EDG Declared Inoperable Due to Failed Start Time.
CR 199807706, EDG Start Time Measurement Methods Not Very Accurate
CR 199807866, 22EDG Failed to Start Within Required Time
CR 199809212, No Procedure for Program/Procedure Changes Following TS Amendments
CR 199810682, EDG system walkdown deficiencies
CR 199810840 Degradation of Fire Protection Foam Under Freezing Conditions
CR 199810884 CVCS Weld Failures Due to Cavitation Erosion
CR 199810933, 24 SW strainer blowdown valve indicator 90 degrees out of alignment, 12/22/98
CR 199810988 Part 21 Review for Valcor Valve Model V70900-11
CR 199811021, 22EDG Jacket Water Exp Tank Level Control Valve Leaks.
CR 199900210, SW strainer pit access hatch leaks, 1/10/99
CR 199900216, RWST instrumentation heat trace alarm
CR 199900327, 25 service water pump in alert range, 1/14/99
CR 199900401, Shaft stop on valve SWN-617 not consistent with other similar valves, 1/19/99
CR 199900470, EDG 21 overspeed trip reset lever pin broken

Condition Reports (Cont.)

CR 199900499, EDG 21 overspeed trip reset lever pin hole oversized
CR 199900536, Multiple problems with 24 SW strainer, 1/25/99
CR 199900576, No procedure for checking function of DG SW outlet valves FCV-1176 & 1176A
for DG jacket water high temperature, 1/26/99
CR 199900600 Loss of RHR During Maintenance
CR 199900653, New DG heat exchanger titanium tube bundles do not fit, 1/28/99
CR 199900698, 21EDG SW to lube oil cooler pressure indicates 0 reading, 130/99
CR 199900719, SWN-618 indication is backwards, 1/31/99
CR 199900830, SPIN database missing setpoints, dated 02/04/1999
CR 199900851, Valve SWN-41-2B Dual Indication
CR 199900869, Request for TS interpretation on failure of containment isolation valve leak test failure, 2/5/99
CR 199901326, EDG ICPM discovered loose wire on lube oil heater temperature switch
CR 199901424, Conduct of training
CR 199901438, Use of controlled procedures
CR 199901816, Lack of feedback to simulator students
CR 199901818, Lack of controlled procedures in simulator
CR 199901819, Simulator CPU weaknesses.
CR 199901821, Communications between training and computer applications
CR 199901822, Simulator operator performed surveillance testing.
CR 199901856, Chipped epoxy coating in 21 CWHX, 3/9/99
CR 199901944, UFSAR Table 6.2-12 discrepancy, 3/11/99
CR 199902505, EDG Jacket Water Exp Tank Float Valve Leaks
CR 199902527, EDG 50.54f identified discrepancies
CR 199902586, 23 SW strainer knocking and slipping in rotation, 3/27/99
CR 199902626, Point Beach cold weather freeze event
CR 199902675, Retire or Resolve Issues with TSC Diesel Generator Alarm Panel
CR 199902815, Knocking sound in 23 SW strainer getting worse, 4/6/99
CR 199903103, 21EDG Jacket Water Exp Tank Level Control Valve Leaks.
CR 199903369, Requirement for Second CCW Pump not Modeled in EDG Study
CR 199903467, 21, 22 & 23 EDG Over Speed Trip Reset Lever Resting On Pin Which Could Cause Premature Failure of Trip Reset Pin.
CR 199904088, 480V cable spreading room smoke detector testing adequacy review
CR 199904447 Fire Induced Failure of VCT Outlet Valve LCV-112C
CR 199905093, New 25 SW pump had only four holddown bolt holes drilled, 6/29/99
CR 199905487, EDG 21 inappropriate mechanical governor venting
CR 199905843, Lack of procedure Guidance to Initiate Data Archive During GT-3 Operation
CR 199906210, 21 SW pump discharge pipe expansion joint is cracked, 8/11/99
CR 199906411, EDG load sequencing relays single failure analysis
CR 199906681, EDG 23 unexpected load reduction from 900kW to 100kW
CR 199906815, 480v bus undervoltage relays without reset values
CR 199906901, Self Identified and Corrected Procedure Violation
CR 199907198, 480v breaker current transformer configuration
CR 199907277, Ability to hear public address systems during emergency

Condition Reports (Cont.)

CR 199907506, TSC DG Room Has an Alarm Panel But No Alarm Response Procedure
CR 199907665, 480v 3A to 6A crosstie breaker bent cell switch
CR 199907767, Concern about questioning attitude, 10/13/99
CR 199908666, EDG engine analysis PM deferral
CR 199908715 Operating Experience Program Enhancements
CR 199908743, Management review of contractor developed lesson plans
CR 199908802 CRS Training Deficiencies
CR 199908817, Timing of Project Completion and Filing of Report Installation
CR 199908826, Drawing and Procedure Discrepancies Associated with Fuel Oil Shipments
CR 199908884, EDG 21 overspeed trip reset lever pin missing
CR 199908999, Technical accuracy of contractor developed lesson plans
CR 199909125, Roll up of deficiencies found during various audits and self-assessments
CR 199909153, ICPM program
CR 199909417, Common Cause Analysis of Events at IP-2
CR 200000128, Qualification record keeping
CR 200000285, NRC Severity Level IV violations for inadequate exercise critiques
CR 200000288, Emergency exercise weakness due to overall poor performance in the TSC
CR 200000289, Emergency exercise weakness due to poor performance in the OSC
CR 200000290, Lapse of ERO Qualifications
CR 200000634, Operations Training extent of condition
CR 200000968, Questions retarding the backup methods for notifying offsite authorities
CR 200000994 CRS Training Needs
CR 2000010694, Service Water Traveling Screen 27 Stops on Zero Speed Alarm
CR 200001093, Logkeeping standards were not met during the Alert of 2/15/2000
CR 200001126, A 50.54(q) review may not have been done on changes made to PI-1023 & IP-1035
CR 200001183, Questions Deleted from Re-qual Test without EP Manager Approval
CR 200001221, Some phones in the OSC/TSC were inoperable during the Alert of 2/15/2000
CR 200001229, Changes to EOF IP were a hindrance to ERO operations regarding step-off pads
CR 200001240, Initial lesson plans not reviewed and updated to reflect plan changes
CR 200001241, Self study modules have not been revised to reflect plan changes
CR 200001301, Failure to conduct event critique with county and State following Alert
CR 200001356, ERO Training Program did not ensure Personnel were Trained in all Positions
CR 200001361, Accountability deficiencies identified during the Alert of 2/15/2000
CR 200001366, 6 year requirement to test off-hours emergency drill not conducted
CR 200001521, 480V undervoltage panel dc power indicating lights not lit
CR 200001621, 21EDG Over Speed Trip Reset Lever Slips to Tripped Position but EDG Remains Reset.
CR 200001874 CAG Procedures for Routine Activities
CR 200002109, Issues concerning off-site monitoring and post accident sampling
CR 200002247, Onsite contractors raising concerns with being in the trailers and not hearing alarms or announcements and what they do in an evacuation

Condition Reports (Cont.)

CR 200002274, 25 SW strainer not rotating smoothly, 3/30/00
CR 200002329, EP Pre-restart plan includes action that could potentially impact the restart of IP2
CR 200002522, Station failed to meet 30 minute requirement for completing accountability
CR 200002591, Employee concern regarding message left at his home for a pager test
CR 200002618 Continued Problems with the OE Program
CR 200002713, Deficiencies identified with the ERO notification system and process
CR 200002788, Deficiencies identified during a drill on 4/17/2000
CR 200002924 Response to Information Notice 2000-06
CR 200002952, Concerns of the PA system and evacuation during an event
CR 200002968, Internal SW piping inspection found shells, 4/24/00
CR 200003182, Compliance with SAO-112 for CR Closure
CR 200003560, Drill weaknesses identified from 5/10/2000 drill
CR 200003568, CR system training attendance
CR 200003578, 22 FUC inspection found tubercles in waterbox, 6/4/00
CR 200003838, Questions regarding Accountability process
CR 200003865 Extent of Condition Information for CRs
CR 200003868 Root Cause Determination Deficiencies
CR 200003890, Deficiencies identified during a 5/14/2000 drill
CR 200003891, Drill weaknesses identified from 5/25/2000 drill
CR 200003945, EDG 21 overspeed trip reset lever pin found on floor
CR 200003978, EDG21 unexpected load change from 750kW to 2300kW
CR 200003987, No page system in NSB location
CR 200004008, EDG prints didn't match as-found wiring
CR 200004012, Valve SWN-44-5B failed leak test, 5/30/00
CR 200004059, Unable to hear alarm or announcement
CR 200004142, Simulator problem noted during the 6/1/00 evaluated exercise
CR 200004149, During 6/1/00 exercise, personnel were walking around and in between the new
simulator building and the energy education center because they had not heard any announcements in the building concerning the drill
CR 200004153, JNC did not demonstrate the ability to coordinate clear, accurate and timely information to the news media during the 6/1/00 exercise
CR 200004181, 23 FCU inlet SW relief valve failed Appendix J leak test, 6/3/00
CR 200004265, Training and Drill weaknesses observed during 6/1/00 exercise
CR 200004311 Self-Assessments for the CAP
CR 200004312, failure of supply cable to MCC 21 due to damage to underground duct bank, dated 6/7/00
CR 200004345, Adequacy of offsite monitoring kits was questioned
CR 200004374, Siren 317 failed growl test
CR 200004393, Weaknesses identified in the JNC during the 6/1/00 exercise
CR 200004471, Contractor developed lesson plans
CR 200004545, 6/14/00 E-Plan training did not meet red team EOF participant's standards

Condition Reports (Cont.)

CR 200004578, EDG 21 mechanical governor mis-adjustment
CR 200004759 Roles and Responsibilities of the CAG
CR 200004766 No Action Plan for CAP
CR 200004839, Frisker failed source check in OSC locker
CR 200004907 Review of INPO SEN 214
CR 200005014 Contract Security Personnel Involvement with Condition Reporting System
CR 200005032, 21EDG Over Speed Trip Reset Lever Will Not Remain Locked in Reset Position.
CR 200005040, Maintaining respirator qualifications
CR 200005153, Training section computer upgrades
CR 200005260, Program deficiencies identified as a result of an root causes analysis
CR 200005332, Procedures, processes and training for the JNC do not allow for adequate information dissemination
CR 200005371, NPSH calculation not adequate, 7/19/00
CR 200005446, Re-evaluation of 1999 Common Cause Analysis corrective actions
CR 200005491, NRC identifies three white findings from Alert event of 2/15/2000
CR 200005516, Valve SWN-71-2B failed stroke test, 7/25/00
CR 200005585 Statement Regarding Technical Specifications
CR 200005640, On 7/28/2000, lost two phone circuits which service Reuter-Stokes at EOF
CR 200005646, PT-R93 doesn't assure design requirements of UFSAR Table 9.6-1 are met, 7/31/00
CR 200005704, TCV-1113 plugged with shells and sediment, 8/2/00
CR 200005815, Questions not trending beeper problems previous to 8/99 may have prevented current problems. Questions continual approval by CARB for extensions of due dates
CR 200005975, Several beepers did not activate during test
CR 200006021, 22 SW strainer not rotating, 8/15/00
CR 200006057, Heat trace functional tests
CR 200006156, Equipment deficiencies found during 8/16/2000 drill, including at JNC
CR 200006157, Deficiencies identified from August 16, 2000 emergency exercise
CR 200006170, Containment Recirculation Pump Effects on EDG Study
CR 200006180, 21 SW strainer dp switch reads 2.5 # when secured and drained, 8/21/00
CR 200006345, 24 SW strainer not rotating, 8/28/00
CR 200006357, LOR-08-00, Operations Training Section Training Program Self-Assessment
CR 200006369, 24 SW strainer tripped on thermals, 8/30/00
CR 200006377, Could not hear message in stairwell
CR 200006381 Noted Decrease in CRs Initiated
CR 200006501, Personnel in VC should not hear alarm
CR 200006508, Personnel unable to clearly understand announcement
CR 200006556, Page speaker in screen well house does not work
CR 200006565, High Head Safety Injection Pump HP Increase
CR 200006619 Training Personnel on Use of Operating Experience
CR 200006658 QA Auditor Training Needs
CR 200006663 Use of Risk Significance in QA

Condition Reports (Cont.)

CR 200006674, Heat trace panel discrepancies
CR 200006702, Flow instability with both FCV-1176 and 1176A in automatic, 9/10/00
CR 200006764, Inadequacies found with facilities and equipment implementing procedures
CR 200006794, Incorrect operability call on CR 200004534, 9/13/00
CR 200006944, FC-5032-A Alarm will not clear
CR 200006965, EDG Fuel Oil Transfer Pump Level Switch Tolerances Were Incorrect
CR 200007026, HPES training
CR 200007070 SAO-112 Procedure Deficiencies
CR 200007072 Effectiveness and Timeliness of Corrective Actions
CR 200007073 Training Needs to Prevent Recurrence
CR 200007078 Engineering Manager Understanding of CR Threshold
CR 200007108, EDG 21, 23 GE CR120A relay failure analysis report
CR 200007265, Johnson SW pumps do not meet hydraulic requirements, 9/27/00
CR 200007418, Relief valve SWN-86 IST failure
CR 200007509, 26 SWPS auto blowdown valve failed to stroke, 10/4/00
CR 200007600, Increase in Service Water Pump Load on EDGs
CR 200007667, Yoke Bushing Broke While Closing Valve JW-5.
CR 200007718, Stranded issues from “inappropriately” closed CR
CR 200007740, 480 V DBD Missing Reference
CR 200007742, 480 V DBD Missing Reference
CR 200007815, SWPS 24 not rotating, 10/13/00
CR 200007923, During the monthly notification drill, CAN was found inoperable
CR 200008089, Water Hammer Potential on Non-Essential SW Header, 10/23/00
CR 200008090, SW System flow model calculation deficiencies, 10/23/00
CR 200008156, EDG Loading Study Requires Revision
CR 200008249, Instrument Air Compressor smoke detector indicating light failure
CR 200008293, Licensed Operator Requalification Program
CR 200008448, Pager vendor inadvertently activated all ERO pagers while testing two. Used wrong test code and caused confusion
CR 200008472, Operator requalification examination results
CR 200008478, 21 SWP oil sample trending toward dilution of oil., 11/2/00
CR 200008487 Use of Circular Logic in CR Closure
CR 200008774, Radiological equipment deficiencies found during drill on 11/9/2000
CR 200008786, Valves SWN-6 and SWN-7 appear to not be properly supported, 11/9/00
CR 200008813, Deficiencies identified from November 9, 2000 emergency exercise
CR 200008829, SW Zurn strainer dp greater than 4 psid acceptance criterion, 11/10/00
CR 200008854, Oil in 24 SW pump appears to be emulsified, 11/11/00
CR 200008981, ERDS Inoperable During Training Session
CR 200009752, Inadequate Safety Evaluation 98-402-PR Regarding Changing EDG Start Time From 10 seconds to 10.5 seconds.

Condition Reports (Cont.)

CR 200009753, Inadequate Operability Determinations 98-012 and 98-013 Regarding Exceeding the EDG 10 second Start Time.
CR 200009927 Part 21 Review of Foxboro Relay for RWST Level Alarm
CR 200009963, Offsite Monitor procedure inadequacies regarding TLDs
CR 200009972, Instrument Air Compressor smoke detector timer failure
CR 200010025, Offsite Monitor procedure inadequacies
CR 200010120, Qualification to operate a crane
CR 200010268, SOP 1.7 discrepancy`
CR 200010277, QA audit finding regarding procedure for making an “emergency repair” under a
declared emergency condition
CR 200010278, QA audit finding regarding EP-AD-02 containing inadequacies and ambiguities
CR 200010279, QA audit finding regarding the adequacy of JNC procedure for preparing initial news releases during an event
CR 200010284, QA audit finding regarding alternating ERO requalification exams
CR 200010322, Alternate location for decontamination and applicable procedures
CR 200010476, Emergency Alarms & pagers are inaudible in Plant Cafeteria
CR 200010490, Does E-Plan training use the systematic approach to training which is used in operator training and technical training programs?
CR 200100170, No basis calculation for SW pumps IST quarterly tests' acceptance criteria, 1/5/01
CR 200100201, Maintenance planning area page
CR 200100290, Respirator qualification lapses for Onsite and Offsite monitors
CR 200100487 Automatic Self Locking Door for Employee Concerns Program Office
CR 200100499, pipe wrench left above instrument air compressors
CR 200100502, Heat trace circuit light intermittent
CR 200100510, Concern with 21 CCW heat exchanger holddown bolts, 1/17/01
CR 200100511, Balance of SW flows through DG heat exchangers, 1/17/01
CR 200100512, Corrosion on stainless steel line in CCW Heat exchanger
CR 200100513, Nuts on 21CCHX do not have full thread engagement, 1/17/01
CR 200100520, Leak rate program
CR 200100533, Page party speaker in NPO office
CR 200100545 Employee Concern Regarding Discontinuance of Posting CRs on Intranet
CR 200100549, NRC Found Instrument Out of Calibration.
CR 200100566, No test of non-essential SW header, 1/18/01
CR 200100577, unfastened deck plates in EDG building
CR 200100586, No condition report generated for failed acceptance criteria in PT-R93, 1/18/01
CR 200100599, Conclusions for Calculation FEX-00148-00
CR 200100606, Dwg 9321-F-4046, EDG Building Control Air Did Not Show 6th Building Exhaust Fan.
CR 200100611, Dwg 9321-F-1460-11, EDG Building Incorrectly Labeled 6th Building Exhaust Fan as #322 (number for the 5th fan) Versus #323.
CR 200100619 Employee Concerns Program Deficiencies

Condition Reports (Cont.)

CR 200100657, Loop 2 Delta-T Deviation Alarm
CR 200100663, scaffolding around instrument air compressor unsupported at base
CR 200100667, housekeeping items in EDG building
CR 200100669, ICPM 1508, Delta -T Deviation Alarm Setpoints
CR 200100700, oil pad fire protection assessment
CR 200100702, untimely generation of CR for instrument air scaffolding operability question
CR 200100714, past operability of instrument air scaffolding
CR 200100749, EDG 22 control room undervoltage annunciator alarming
CR 200100759, Field operator confusion over 125v DC control power indication
CR 200100773, 480V work orders incorrectly categorized (CM vs. other)
CR 200100782, EDG Fuel Oil Storage Issues
CR 200100783, Reduced SW flow to instrument air coolers, 1/23/01
CR 200100786, Temporary power cord connected to Air Compressor in EDG building
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SOP 27.3.3, Diesel Fuel Oil Truck Operation, Rev. 3
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NP-00-15890, Replacement of EDG 23 Unit Parallel Switch and PMT
NP-00-16300, Repair EDG 21 Governor and PMT
NP-99-10747, Replace EDG 23 Governor Raise/Lower Switch and PMT
NP-00-18640, Repair of MCC 26A Breaker Operating Handle and PMT
NP-00-19106, Repair of Distribution Panel Lead
NP-00-18111, Repair EDG 21 Day Tank Transfer Switch
NP-00-18162, Repair EDG 23 Cylinder Thermocouple Loose Fittings
NP-00-18270, Calibration of EDG 21 Voltage Meters
NP-00-18164, Repair EDG 21 Cylinder Thermocouple Loose Fittings
NP-00-18140, Replacement of EDG 22 Degraded 86 Relay and PMT
NP-00-17924, Replacement of EDG 21 Control Relays and PMT
NP-00-17921, Replacement of EDG 23 Control Relays
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NP-93-65938, Inspect Breaker and Megger Motor for 23SWP
NP-98-80081, Megger 24 CRF Motor
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NP-00-16109, Megger 21 AFP Motor
NP-97-90734, Woodward Electronic Governor, 22EDG
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NP-98-83218, Woodward Electronic Governor, 23EDG
NP-00-17433, PMT of 23EDG

ATTACHMENT 4

PARTIAL LIST OF PERSONS CONTACTED

Adams, E. - Dosimetry Technician
Altic, Bill - Senior Instructor, Shift Training Advocate
Andreozzi, Vincent - 480 Vac Electrical System Engineer
Baumstark, J. - VP Engineering
Bishop, Dave - Work Week Manager
Blatt, Michael - External Affairs
Blichfeldt, C. - Maintenance
Brooks, Kevin - Operations
Brovarski, C. - Communications Manager
Browne, F. - Maintenance
Buletta, John - Watch Engineer
Burns, T. - Supervisor, Nuclear Environmental Manager
Burns, R. - Emergency Planning Analyst
Carpenter, S. - Response Team Maintenance Contact
Cornax, Denis - Watch Engineer, Operations
Dahl, George - Fire Protection Engineer
Dean, Greg - Assistant Operations Manager
Dean, Roger - Senior Instructor, Shift Training Advocate
DeGasperis, Eddie - Nuclear Plant Operator
DiUglio, Anthony - Employee Concerns Program Manager
Dong, Ang - I & C Supervisor
Donnegan, M. - HP Manager
Dunleavy, C. - Administrative Officer, Orange County Office of Emergency Management
Durr, B. - Shift Manager,
Elam, T. - Outage Planning Supervisor
Entenberg, M. - Section Manager, Electrical Design and Facilities Engineering
Ferraro, T. - Sr. Emergency Planning Engineer
Finucan, Ken - Senior Quality Assurance Examiner
Freer, S. - Computer Applications
Gibb, J. - New York Emergency Management Agency
Ginsburg, Arthur - Chemistry Department
Goebel, Joseph - Lead Auditor - Quality Assurance
Gotchius, Ed - Manager of Safety Analysis
Greeley, D. - Asst. Director, Rockland County Office of Fire & Emergency Service
Greene, D. - Asst. Director, Orange County Office of Emergency Management
Griffith, Phil - PRA Supervisor
Gross, G. - Instrument Supervisor
Hale, J. - Senior Consultant
Horner, T. - Electrical Design Engineer
Hornyak, Michael - Corrective Action Group
Huestis, M. - Outage Manager
Inzirillo, F. - EP Manager
Jayaraman, Vadakkant - Engineering
Kempski, Mike - EDG System Engineer
Klein, Tom - Electrical Design Technical Specialist
Langerfeld, R. - Senior Reactor Operator, Generation Support

Lasley, R. - Department Manager, System Performance
Lee, A. - Sr. Emergency Planning Consultant, OSSI
Libby, Earl - Senior Instructor
Lijoi, J. - Control Room Supervisor
MacKenzie, Bruce - Corrective Action Group
Mansell, Jon - Outage Coordinator
Marguglio, Ben - Quality Assurance Auditor
Margulio, B. - Quality Assurance Auditor
McCaffrey, T. - Electrical System Engineer
McKee, Tom - Test Engineer
Meek, Brian - EDG and Gas Turbine System Engineer
Miele, Michael - Radprotection and Chemistry
Miller, Mark - Operations
Murdock, John - Shift Manager
Murphy, L. - Director, Westchester County Office of Emergency Management
Murphy, Diedre - Nuclear Training Manager
Naku, Klaus - Inspection Response Team Member
Nichols, John - Operations Training Section Manager
Parker, D. - Maintenance Section Manager
Parry, J. - Project Manager
Pehush, J. - 50.54(f) Reviewer, Setpoint Group
Poplees, Frank - Chemistry Instructor
Porrier, Tom - Work Control Manager
Pries, D. - Maintenance
Rampolla, M. - Director, Putnam County Office of Emergency Management
Ready, Jim - Field Support Supervisor
Reynolds, Joseph - Corrective Action Group
Robinson, H. - Senior Electrical Design Engineer
Rogers, Mike - Shift Training Advocate, Computer Applications Liaison
Rohla, Ross - Operations
Rowland, J. - 50.54(f) Reviewer, Configuration Management Group
Rumold, Jerry - Field Support Supervisor
Russell, Pat - Corrective Action Group Manager
Santini, Phil - Watch Engineer
Shah, Dean - Engineering
Shalabi, Khalil - Work Process Manager
Shoen, P. - Shift Manager
Smith, Bill - Assistant Operations Manager for Planning
Smith, L. - Section Manager, Civil Design Engineering
Speedling, Paul - Fire Protection Specialist
Teague, Thomas - Chemistry Department
Toscano, Jim - Unit Coordinator
Townsend, Larry - Shift Manager, Operations
Tumicki, Michael - Corrective Action Group
Tuohy, J. - Department Manager, Design Engineering

Ventosa, John - Site Engineering
Villani, L. - Response Team Engineering Lead Contact
Von Staden, Pat - Assistant Operations Manager (Corrective Actions/Training Coordinator)

Waddell, Tom - Maintenance Manager
Walker, K. - Sr. Emergency Planning Consultant, Operations Support Services, Inc. (OSSI)
Walsh, Kevin - Operations
Walther, Matthew - Engineering
Wassmann, P. - Administrative Assistant
Woody, Erin - I & C Manager
Xing, Michael - PSA Contractor
Zulla, S. - Response Team Electrical Design Contact

Federal Emergency Management Agency
Region II
Jacob K. Javits Federal Building
26 Federal Plaza, Room 1307
New York, NY 10278-0002

February 21, 2003

Mr. Edward F. Jacoby, Jr., Director
New York State Emergency Management Office
Building #22, Suite 101
1220 Washington Avenue
Albany, New York 12226-2251

RE: Radiological Emergency Preparedness Program – Indian Point Energy Center
Response Due: May 2, 2003

Dear Mr. Jacoby:

Please find enclosed five copies of the Final Exercise Report for the Indian Point 2 Full-Participation Plume Exposure Pathway conducted September 24, 2002 (Attachment A). The State of New York and the counties of Westchester, Rockland, Orange and Putnam in New York, and Bergen in New Jersey participated during the exercise.

There were no Deficiencies and thirteen Areas Requiring Corrective Action (ARCAs) identified as a result of this exercise. There are also six unresolved ARCAs from the November 2000 plume exercise and one ARCA that remains unresolved from the May 1999 ingestion pathway exercise. Twenty-two prior ARCAs were adequately demonstrated and are now closed.

In addition to the Exercise Report, please find attached an update of our review of the 2000 plans for the State and the four risk counties including a review of the plan changes submitted in 2002 (Attachment B). The attached identifies all the plan issues previously raised by FEMA in past reviews and cross-references them against the State's independent. We have included additional information on the status of each plan issue identified. As you are aware, the State agreed to update all plans prior to the September 24, 2002, exercise. It is important to note that significant planning items have yet to be addressed almost five months after the September exercise.

AX45

No exercise finding rose to the level of a Deficiency as defined in 44 C.F.R. Part 350. However, based on the absence of corrected and updated plans from the counties and State, as outlined in the enclosures, at this time, I am not able to provide a final recommendation of "reasonable assurance" that the county and State officials can take appropriate measures.

The primary concern of FEMA is the health and safety of the public. The State and FEMA, as demonstrated by our efforts and cooperation in the REP Program over the last 20 years, have always worked closely in resolving any issues regarding emergency preparedness. If the State of New York, as previously requested, can provide updated plans on or before May 2, 2003, then this decision will be re-evaluated. If, in the event the State is unable to do so, in my capacity as Acting Regional Director, I will proceed with advising FEMA headquarters that I cannot provide a recommendation of reasonable assurance that the State and local plans are adequate to protect the health and safety of the public. In this event, FEMA headquarters would notify the Nuclear Regulatory Commission (NRC) and the Governor of New York State of the decision.

During this process, if initiated, you will have an opportunity to provide a plan for corrective action with a negotiated completion date from FEMA. Failure to comply would result in formal notification to the NRC that "reasonable assurance" cannot be issued. In any event, Region II and our FEMA headquarters will assist the State in addressing all planning issues.

Please feel free to contact me for further information.

Sincerely,

Joseph Picciano
Acting Regional Director

Attachments

ATTACHMENT A

Exercise Report

INDIAN POINT 2
NUCLEAR POWER STATION

Licensee:	ENTERGY
Exercise Date:	September 24, 2002
Report Date:	February 21, 2003

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION II

26 Federal Plaza
New York, New York 10278

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APPENDICES

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I. EXECUTIVE SUMMARY

On September 24, 2002, the Federal Emergency Management Agency (FEMA) evaluated an exercise in the plume exposure pathway around the Indian Point 2 Nuclear Power Station. Specifically, the purpose of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency in the 10 mile Emergency Planning Zone (EPZ). This exercise was held in accordance with FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans (RERP) and procedures.

FEMA wishes to acknowledge the efforts of the many individuals in New York State; Westchester, Rockland, Orange, and Putnam Counties; and Bergen County, New Jersey who participated in this exercise.

Protecting the public health and safety is the full-time job of some of the exercise participants and an additional assigned responsibility for others. Still others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. The cooperation and teamwork of all participants were evident during this exercise.

This report contains the final evaluation of the biennial exercise and the evaluation of the following out-of-sequence activities in Orange, Putnam, Rockland and Westchester counties: Reception Centers; Congregate Care Centers; Emergency Worker Personnel Monitoring Centers; General and Special Population Bus Companies; School Bus Companies; Traffic Control Points; School Interviews; Medical Drills and Siren Tests.

Exercise Results

The State and local organizations, except where noted in this report, satisfactorily demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. While no Deficiencies were identified during the exercise, thirteen (13) Areas Requiring Corrective Action (ARCAs) were identified and are discussed in more detail in this report. Seven of these involved the Joint News Center and the provision of information to the media and the general public. The remaining were county operational ARCAs.

In addition, twenty-one ARCAs from the previous exercise have been resolved; thirteen were resolved either immediately (at the time of demonstration) or on follow-up before December 31, 2000. One ARCA, concerning dose assessment at the State EOC, was resolved at the full-scale exercise for the Nine Mile Point plant on December 4, 2001. Five ARCAs from the November 2000 plume phase exercise and one ARCA from the May 1999 ingestion exercise remain unresolved. The prior ARCAs that either were or were not resolved at the September 2002 exercise are described in this report.

Planning Issues

FEMA Region II staff, assisted by the Regional Assistance Committee (RAC), composed of

representatives of 11 federal agencies, performed a review of the State and county Radiological Emergency Response Plans and procedures for Indian Point. The results of that review were provided to the State on January 15, 2002. This was followed up with a letter dated December 3, 2002, which summarized remaining concerns and the State's commitment to take corrective action. Although the State and counties have responded to a number of FEMA's concerns with the plans as described in the plan review, there remain weaknesses in the plans. Some of these concerns were included in the State's own draft report "Review of Emergency Preparedness at Indian Point and Millstone"1 (the State Report). While FEMA's review is more comprehensive, the State Report did validate a number of our previous findings. Moreover, we value many of the findings in the State Report and understand the concerns it generated among State and local officials surrounding the facility. It should be noted that all of the planning findings in the State Report were previously raised by FEMA; and the State and counties have previously agreed to correct the weaknesses or to provide missing information. FEMA's updated plan review "Reviews of the Radiological Emergency Response Plans for the State of New York, and the Indian Point Counties" (based on the State and county 2002 plans) includes similar planning issues raised by the State in its own report. This review is provided under separate cover and includes further comment on the State Report and related information. Among the issues raised in FEMA's updated plan review, the most significant outstanding planning issues include:

1. Neither the State nor the counties have submitted their *Letters of Agreement* for FEMA review in order to determine the availability of resources needed by the counties in event of an incident at the plant.

2. *The Joint News Center Procedures and Public Education Workplan*, which is the basic procedure for dissemination of information to the public during a response to an emergency at the plant, is inadequate and continues to interfere with performance, as noted during both the 2000 and 2002 exercises.

3. The plans do not yet have the information from the *Updated Evacuation Time Estimates* (ETE) that have been prepared to reflect new demographics as well as shadow evacuation. Without the updated ETEs, the plans do not reflect the latest information on the time(s) it would take to evacuate the population of an emergency response planning area under various conditions (i.e., time of day, day of week, time of year, weather conditions, etc

4. While the procedures for schools in the plans are adequate, the individual school district, pre-school and day care center plans also need to be submitted to FEMA for review.

New York State Report Findings

On August 1, 2002, Governor George Pataki announced that James Lee Witt Associates (JLWA) would conduct a comprehensive and independent review of emergency preparedness around the

1 "Review of Emergency Preparedness at Indian Point and Millstone – Draft," James Lee Witt Associates, LLC, January 10, 2003.

Indian Point Energy Center and that portion of New York that is near the Millstone Nuclear Power Plant located in Connecticut. On January 10, 2003, a draft report entitled "Review of Emergency Preparedness at Indian Point and Millstone" was released by JLWA for public comment. Comments on this draft State report were to be submitted by February 7, 2003.

FEMA has reviewed the draft State report and prepared written responses to the major findings contained in the report. FEMA believes that the draft State report raises a number of issues that should be considered for enhancing the level of preparedness in the communities surrounding the Indian Point Energy Center. These include better education of the public, more training of offsite responders and improved emergency communications. Some of these issues should be evaluated for their applicability program-wide. However, FEMA also believes that a number of issues raised by the state report are not supported by FEMA's own exercise evaluations, plan reviews and knowledge of the REP Program.

FEMA's detailed responses to these issues can be found in the second attachment to the letter to the Director of the New York State Emergency Management Office entitled "Reviews of the State and County Radiological Emergency Response (REP) Plans for the Indian Point Energy Center and Comments on the REP Program, Planning and Exercise Issues Raised by Others." FEMA will obtain and review the final state report when it is released to ensure that any revisions that could affect our final determination are taken into consideration.

Out-of-Sequence Activities

Numerous out-of sequence activities were demonstrated and evaluated as part of the 2002 exercise for Indian Point. Out-of-sequence activities are demonstrations of facilities and knowledge of procedures that occur out of sequence with the full-scale exercise scenario. The following activities were conducted and evaluated by FEMA personnel in order to develop a better understanding of the level of preparedness:

18 School Interviews
10 School Bus Company Interviews
9 Special Population Bus Company Interviews
8 Congregate Care Centers
4 Reception Centers
4 Emergency Worker Personnel Monitoring Centers
6 Traffic Control Points
4 Medical MS-1 Drills
Full-System Siren Test – March 26, 2002

Conclusions

Although, as noted above, no exercise finding rose to the level of a Deficiency as defined under 44 CFR Part 350, at this time, FEMA, in the absence of fully corrected and updated plans for the

counties and State, cannot provide "reasonable assurance" that appropriate measures can be taken in the event of a radiological emergency. However, should the State of New York provide complete plans on or before May 2, 2003, with a schedule of corrective actions to address the exercise issues, then this decision will be re-evaluated. If the State is unable to do so, FEMA will proceed with notification to FEMA Headquarters that assurance cannot be provided regarding the adequacy of the plans to protect the health and safety of the public. At that time, FEMA headquarters would notify NRC and the Governor of the decision.

FEMA and the State of New York and the counties in the emergency planning zone have worked together to assure the safety and health of the public in the event of an incident at Indian Point Energy Center. FEMA anticipates that the planning issues cited above and the exercise issues described in the report will be addressed and resolved in a timely fashion.

II. INTRODUCTION

On December 7, 1979, the President directed FEMA to assume the lead responsibility for all offsite nuclear planning and response. FEMA's activities are conducted pursuant to 44 Code of Federal Regulations (CFR) Parts 350, 351, and 352. These regulations are a key element in the REP Program that was established following the Three Mile Island Nuclear Station accident in March 1979.

FEMA Rule 44 CFR 350 establishes the policies and procedures for FEMA's initial and continued approval of State and local governments' radiological emergency planning and preparedness for commercial nuclear power plants. This approval is contingent, in part, on State and local government participation in joint exercises with licensees.

FEMA's responsibilities in radiological emergency planning for fixed nuclear facilities include the following:

- Taking the lead in offsite emergency planning and in the review and evaluation of RERPs and procedures developed by State and local governments;

- Determining whether such plans and procedures can be implemented on the basis of observation and evaluation of exercises of the plans and procedures conducted by State and local governments;

- Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA dated June 17, 1993, (*Federal Register*, Vol. 58, No. 176, September 14, 1993); and

- Coordinating the activities of the following Federal agencies with responsibilities in the radiological emergency planning process:

  - U.S. Department of Commerce,
  - U.S. Nuclear Regulatory Commission,
  - U.S. Environmental Protection Agency,
  - U.S. Department of Energy,
  - U.S. Department of Health and Human Services,
  - U.S. Department of Transportation,
  - U.S. Department of Agriculture,
  - U.S. Department of the Interior
  - U.S. Food and Drug Administration, and
  - U.S. Department of Defense.

Representatives of these agencies serve on the FEMA Region II Regional Assistance Committee (RAC), which is chaired by FEMA.

Formal submission of the RERPs for the Indian Point Nuclear Power Station to FEMA Region II by the State of New York and involved local jurisdictions occurred on October 10, 1991. Formal approval of the RERP was granted by FEMA on May 3, 1996, under 44 CFR 350.

A full-scale REP exercise was evaluated on September 24, 2002 by FEMA assess the capabilities of State and local emergency preparedness organizations in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency at the Indian Point 2 Nuclear Power Station. The purpose of this exercise report is to present the exercise results and findings on the performance of the offsite response organizations (ORO) during a simulated radiological emergency.

The findings presented in this report are based on the evaluations of the Federal evaluator team, with final determinations made by the FEMA Region II RAC Chairperson, and approved by the Regional Director.

The criteria utilized in the FEMA evaluation process are contained in:

- NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980; and

- "Radiological Emergency Preparedness: Exercise Evaluation Methodology," published in the *Federal Register* on September 12, 2001, and revised April 25, 2002.

Section III of this report, titled "Exercise Overview," presents basic information and data relevant to the exercise. This section of the report contains a description of the plume pathway EPZ, a listing of all participating jurisdictions and functional entities that were evaluated, and a tabular presentation of the time of actual occurrence of key exercise events and activities.

Section IV of this report, titled "Exercise Evaluation and Results," presents detailed information on the demonstration of applicable exercise objectives at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format. This section also contains: (1) descriptions of all Deficiencies and ARCAs assessed during this exercise, recommended corrective actions, and the State and local governments' schedule of corrective actions for each identified exercise issue, and (2) descriptions of unresolved ARCAs assessed during previous exercises and the status of the OROs' efforts to resolve them.

III. EXERCISE OVERVIEW

Contained in this section are data and basic information relevant to the September 24, 2002, exercise to test the offsite emergency response capabilities in the area surrounding the Indian Point 2 site. This section of the exercise report includes a description of the plume pathway EPZ, a listing of all participating jurisdictions and functional entities that were evaluated, and a tabular presentation of the time of actual occurrence of key exercise events and activities.

A. Plume Emergency Planning Zone Description

The Indian Point Nuclear Power Station's (IPNPS) 10-mile plume pathway EPZ contains portions of four New York State counties: Orange, Putnam, Rockland, and Westchester.

The IPNPS is located on the east bank of the Hudson River about 24 miles north of the New York City boundary line at Indian Point, Village of Buchanan in upper Westchester County, New York. The station is about 0.8 miles southwest of the city of Peekskill, 8.3 miles south of West Point, 1.5 miles northeast of the Lovett Generating Station site, 4.6 miles north of the Bowline Point Generating Station site, and 2.3 miles north of Montrose Point.

The Indian Point Site is accessible by several roads in the Village of Buchanan. Broadway, a two-lane paved road, borders the site to the east and is the primary access road to the site. The Village roads of Bleakley Avenue and First Street enter Broadway across from the eastern site boundary. Additionally, a paved road links the eastern boundary of the site to the plants.

There are no residences within the site boundary. In addition, there are no public highways or railroads that traverse the site area.

The Indian Point Site is surrounded on almost all sides by high ground ranging from 600 to 1,000 feet above sea level. The site is on the east bank of the Hudson River which runs northeast to southwest at this point but turns sharply northwest approximately two miles northeast of the site. The west bank of the Hudson is flanked by the steep, heavily wooded slopes of the Dunderberg and West Mountains to the northwest (elevations 1,086 feet and 1,257 feet respectively) and Buckberg Mountain to the west-southwest (elevation 793 feet). These peaks extend to the west by other names and gradually rise to slightly higher peaks.

The general orientation of this mass of high ground is northeast to southwest. One mile northwest of the site, Dunderberg Mountain bulges to the east; north of Dunderberg and the site, high ground reaching 800 feet forms the east bank of the Hudson as the river makes a sharp turn to the northwest. To the east of the site, peaks are generally lower than those to the north and west. The Spitzenberg and Blue Mountains average about 600 feet in height and there is a weak, poorly defined series of ridges that again run mainly in a north-northeast direction. The river south of the site makes another sharp bend to the southeast and then widens as it flows past Croton and Haverstraw.

The IPNPS is approximately 239 acres in size and contains three pressurized water reactors: Unit 1 (615 MWt, 265 MWe, de-fueled), Unit 2 (2,758 MWt, 873 MWe), and Unit 3 (3,025 MWt, 965 MWe). Indian Point Unit 3 is adjacent to and south of Unit 1 and Unit 2 is to the north of Unit 1. The two operating units, #'s 2 and 3, were designed by the Westinghouse Electric Corporation.

The Indian Point pressurized water nuclear power plants each contain a nuclear reactor and closed loops of pressurized water that remove the heat energy from the reactor core and transfer the energy to a secondary water system that generates steam. The steam, in turn, drives a turbine generator set which produces electric power.

B. Exercise Participants

The following agencies, organizations, and units of government participated in the Indian Point 2 exercise on September 24, 2002.

Federal Agencies

United States Military Academy

State of New York

New York State Department of Health
New York State Department of Highways
New York State Department of Social Services
New York State Department of Transportation
New York State Emergency Management Office
New York State Emergency Medical Services Coordinator
New York State Energy Research and Development Authority
New York State Police
New York State Public Service Commission

Risk Jurisdictions

Orange County

Orange County Attorney
Orange County Department of Health
Orange County Department of Public Works
Orange County Department of Social Services
Orange County Emergency Management Office
Orange County Emergency Medical Services
Orange County Executive
Orange County Radiological Officer
Orange County Public Information Officer
Orange County School Liaison
Orange County Sheriff's Office

Putnam County

Putnam County Bureau of Fire and Emergency Medical Services
Putnam County Fire Department
Putnam County Health Department

Putnam County Highway Department
Putnam County Office for the Aging
Putnam County Office of Personnel
Putnam County School District
Putnam County Sheriff's Office
Putnam County Social Services

Rockland County

Local Police Departments
Rockland County Department of Health
Rockland County Mental Health
Rockland County Office of the Aging
Rockland County Public Information Office
Rockland School Representative

Westchester County

Bureau of Environmental Quality
Bureau of Public Health Protection
City of Peekskill
Civil Air Patrol
Department of Schools
General Services Department
Westchester County Community Mental Health
Westchester County Department of Environmental Facilities
Westchester County Department of Health
Westchester County Department of Parks, Recreation & Conservation
Westchester County Department of Social Services
Westchester County Emergency Management Agency
Westchester County Emergency Medical Services
Westchester County Executive Office
Westchester County Finance Department
Westchester County Fire and Safety
Westchester County Local Emergency Planning Committee
Westchester County Medical Center
Westchester County Office of Emergency Services
Westchester County Police
Westchester County Public Information Office
Westchester Department of Public Works
Yorktown Municipal Police Department

Support Jurisdictions

Bergen County

Bergen County Office of Emergency Management

Private/Volunteer Organizations

American Red Cross
Civil Air Patrol
Nuclear Power Generation Utilities Technical Representative
Orange County Amateur Radio Emergency Services (ARES)/
Radio Amateur Civil Emergency Service (RACES)
Putnam County RACES
Putnam Emergency Amateur Repeater League
Rockland County RACES
Salvation Army
Volunteers from RACES
WABC AM Radio Station
Westchester County RACES

Out-of-Sequence Activities

The out-of sequence activities that were demonstrated and evaluated as part of the 2002 exercise for Indian Point are listed below:

School Interviews

Orange County

- James O'Neil High School (September 23, 2002)

Putnam County

- Putnam Valley Middle School/High School (May 2, 2002)
- Bonous Montessori (May 23, 2002)
- Garrison U.F.E.S (June 12, 2002)

Rockland County

- Lime Kiln Elementary School (May 28, 2002)
- St. Paul's School (June 10, 2002)
- Clarkstown North Senior High School (September 18, 2002)
- James A. Farley Middle School (September 18, 2002)
- Robin Hill Nursery School (September 18, 2002)

Westchester County

- Buchanan-Verplanck Elementary School (June 10, 2002)
- Croton-Harmon High School (June 12, 2002)
- Hillcrest Elementary School (June 12, 2002)
- West Orchard Elementary School (June 13, 2002)
- Pinesbridge School (June 14, 2002)
- St. Patrick's School (June 14, 2002)
- Briarcliff High School (June 17, 2002)
- Benjamin Franklin Elementary School (June 17, 2002)
- St. Ann's School (June 17, 2002)

School Bus Company Interviews

Orange County

- West Point Tours (August 15, 2002)

Putnam County

- Putnam County School District (May 2, 2002)
- Hudson Valley Bus (June 12, 2002)

Rockland County

- Chestnut Ridge (June 11, 2002)
- Clarkstown Central School District (June 12, 2002)
- Haverstraw (June 13, 2002)
- Peter Brega (June 14, 2002)

Westchester County

- Liberty Lines (September 10, 2002)
- Hendrick Hudson School District (September 16, 2002)
- Lakeland Central School District (September 19, 2002)

Special Population Bus Company Interviews

Orange County

- West Point Tours (August 15, 2002)

Putnam County

- Mahopac School District (April 18, 2002)
- Haldane School District (June 19, 2002)

Rockland County

- Chestnut Ridge (June 11, 2002)
- Clarkstown Central School District (June 12, 2002)
- Haverstraw (June 13, 2002)
- Peter Brega (June 14, 2002)

Westchester County
- Liberty Lines (September 10, 2002)
- Royal Coach (September 10, 2002)

Congregate Care Centers

Orange County
- Twin Towers Middle School (August 20, 2002)

Putnam County
- George Fisher Middle School (July 30, 2002)

Rockland/Bergen Counties
- Fairleigh Dickinson University (September 4, 2002)
- Bergen Community College (September 9, 2002)
- Ramapo College (September 9, 2002)

Westchester County
- Westchester Community College (August 14, 2002)

Reception Centers

Orange County
- Heritage Middle School (August 1, 2002)

Putnam County
- Carmel High School (July 30, 2002)

Rockland County
- Suffern High School (August 19, 2002)

Westchester County
- Westchester Community College (August 14, 2002)

Emergency Worker Personnel Monitoring Centers

Orange County
- Board of Cooperative Educational Services (BOCES) (September 19, 2002)

Putnam County

- Carmel Fire Department (April 30, 2002)

Rockland County

- County Sewer District (June 25, 2002)

Westchester County

- Fire Training Center (July 10, 2002)

Traffic Control Points (Conducted during the exercise, but out-of-sequence)

- Orange County Sheriff's Department (September 24, 2002)
- Putnam County Sheriff's Department (September 24, 2002)
- Rockland County – Clarkstown (September 24, 2002)
- Rockland County – Stony Point (September 24, 2002)
- Westchester County – County Police (September 24, 2002)
- Westchester County – Yorktown Police (September 24, 2002)

Medical MS-1 Drills

- Putnam Hospital (May 15, 2002)
- Westchester Medical Center (June 11, 2002)
- Cornwall Hospital (October 24, 2001)
- Good Samaritan Hospital (May 4, 2001)

Full-System Siren Tests – March 26, 2002.

C. Exercise Timeline

Table 1, on the following page, presents the time at which key events and activities occurred during the Indian Point Exercise on September 24, 2002. Also included are times notifications were made to the participating jurisdictions/functional entities.

Table 1. Exercise Timeline
INDIAN POINT 2 – September 24, 2002

Emergency Classification Level or Event	Time Utility Declared (RECS)	Time That Notification Was Received or Action Was Taken								
		NY State EOC	JNC	EAS @ WABC	Putnam Co. EOC	Rockland Co. EOC	Westches-ter Co. EOC	Orange Co. EOC	Bergen Co. EOC	EOF
Alert	0837	0845	-	-	0844	0837	0845	0844	0911	0845
Site Area Emergency	1126	1135	1141	-	1133	1136	1129	1132	1149	1126
General Emergency	1222	1228	1230	-	1228	1222	1228	1226	1250	1222
Simulated Rad. Release Started	1329 (EOF) or 1349 (NYS)	1358	1416	-	1357 (EOF Facilities) 1400 (RECS)	1403	1345	1359	1441	1335 data 1355 announ-ced
Simulated Rad. Release Terminated	1513	1521	1546	-	1513	1526	1521	1520	1540	1514
Facility Declared Operational		0935	0953	N/A	0928	0933	0948	1000	0910	0905* 0945**
Declaration of State of Emergency by State		1125	1132	-	1130	1130	1129	1120	-	-
Declaration of State of Emergency by County		-	-	-	1130	-	-	-	-	-
Exercise Terminated		1603	1607		1603	1603	1605	1605	1603	1602
Early Precautionary Actions:		0940						1007		
Closing All Schools					1101					
Evacuation of School Children			-	-	1103	-	-		-	-
Dairy Animals on Stored Feed/Covered Water		1111			1119					
1st Notification Sequence										
Siren:		1011			1011	1011	1011	1010	-	1011
EAS:		1014	1014	1014	1014	1014	1014	1014		

Table 1. Exercise Timeline
INDIAN POINT 2 – September 24, 2002

Emergency Classification Level or Event	Time Utility Declared (REGS)	Time That Notification Was Received or Action Was Taken								
		NY State EOC	JNC	EAS @ WABC	Putnam Co. EOC	Rockland Co. EOC	Westches-ter Co. EOC	Orange Co. EOC	Bergen Co. EOC	EOF
2nd Notification Sequence Shelter: Remaining Evacuate: 1, 2, 3, 4, 7, 8, 16, 18, 26, 29, 38, 39	1211	-	-	1211	1211	1211	1211	-	1223	
2nd Siren Activation	1223	-	-	1223	1223	1223	1223	-	-	
2nd EAS or EBS Message	1226	1226	-	1226	1226	1226	1226			
3rd Notification Sequence Shelter: Remaining Evacuate: 1, 2, 3, 4, 7, 8, 9, 16, 18, 26, 29, 38, 39	1437			1303	1303	1303	1303	-	1315	
3rd Siren Activation	1449	-	-	1315	1315	1315	1315	-	-	
3rd EAS or EBS Message	1452	1318	-	1318	1318	1318	1318	-	-	
4th Notification Sequence Decision to Expand PAR Shelter: Remaining Evacuate: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 16, 17, 18, 19, 20, 23, 24, 25, 26, 29, 30, 38, 39, 40	1437	-	-	1437	1437	1437	1437	-	1449	
4th Siren Activation	-	-	-	1449	1449	1449	1449	-	-	
4th EAS or EBS Message	-	1452	-	1452	1452	-	1452	-	-	
KI Decision	-	-	-	1530	1517	-	1518	-	N/A	

Table 1. Exercise Timeline
INDIAN POINT 2 – September 24, 2002

* facility
** arrival of last EOC staff member

PAD for 2nd ANS –	Evacuate ERPA's: Westchester, Putnam Shelter ERPA's: Westchester, Rockland, Putnam, Orange
PAD for 3rd ANS –	Evacuate ERPA's: Westchester, Putnam Shelter ERPA's: Westchester, Rockland, Putnam, Orange
PAD for 4th ANS –	Evacuate ERPA's: Westchester, Putnam, Orange, Rockland Shelter ERPA's: Westchester, Rockland, Orange

IV. EXERCISE EVALUATION AND RESULTS

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities that participated in the September 24, 2002, exercise to test the offsite emergency response capabilities of State and local governments in the 10-mile EPZ surrounding the Indian Point 2 Nuclear Power Station.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of criteria contained in the September 12, 2001, *Federal Register* Notice (revised April 25, 2002). Detailed information on the exercise criteria and the extent-of-play agreement used in this exercise are found in Appendix 3 of this report.

A. Summary Results of Exercise Evaluation – Table 2

The matrix presented in Table 2, on the following page(s), presents the status of all exercise criteria which were scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise criteria are listed by number and the demonstration status of those criteria is indicated by the use of the following letters:

M - Met (No Deficiency or ARCAs assessed and no unresolved ARCAs from prior exercises)

D - Deficiency assessed

A - ARCA(s) assessed

N - Not Demonstrated (Reason explained in Subsection B)

U - Unresolved ARCA(s) from prior exercises

(See attached file IP2 SERF TABLE 2 final)

(See attached file IP2 SERF TABLE 2 final)

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A. Summary Results of Exercise Evaluation

This subsection provides information on the evaluation of each participating jurisdiction and functional entity, in a jurisdiction-based, issues-only format. Presented below is a definition of the terms used in this subsection relative to objective demonstration status.

- **Met** - Listing of the demonstrated exercise objectives under which no Deficiencies or ARCAs were assessed during this exercise and under which no ARCAs assessed during prior exercises remain unresolved.

- **Deficiency** - Listing of the demonstrated exercise objectives under which one or more Deficiencies were assessed during this exercise. Included is a description of each Deficiency and recommended corrective actions.

- **Area Requiring Corrective Actions** - Listing of the demonstrated exercise objectives under which one or more ARCAs were assessed during the current exercise or ARCAs assessed during prior exercises remain unresolved. Included is a description of the ARCAs assessed during this exercise and the recommended corrective action to be demonstrated before or during the next biennial exercise.

- **Not Demonstrated** - Listing of the exercise objectives which were not demonstrated as scheduled during this exercise and the reason they were not demonstrated.

- **Prior ARCAs - Resolved** - Description of ARCAs assessed during previous exercises which were resolved in this exercise and the corrective actions demonstrated.

- **Prior ARCAs - Unresolved** - Description of ARCAs assessed during prior exercises which were not resolved in this exercise. Included is the reason the ARCA remains unresolved and recommended corrective actions to be demonstrated before or during the next biennial exercise.

The following are definitions of the two types of exercise issues which are discussed in this report.

- A **Deficiency** is defined in FEMA-REP-14 as "...an observed or identified inadequacy of organizational performance in an exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant."

- An **ARCA** is defined in FEMA-REP-14 as "...an observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety."

FEMA has developed a standardized system for numbering exercise issues (Deficiencies and ARCAs). This system is used to achieve consistency in numbering exercise issues among FEMA Regions and site-specific exercise reports within each Region. It is also used to expedite tracking of exercise issues on a nationwide basis.

The identifying number for Deficiencies and ARCAs includes the following elements, with each element separated by a hyphen (-).

- **Plant Site Identifier** - A two-digit number corresponding to the Utility Billable Plant Site Codes.
- **Exercise Year** - The last two digits of the year the exercise was conducted.
- **Evaluation Area Criterion** - A letter and number corresponding to the criteria in the FEMA REP Exercise Evaluation Methodology.
- **Issue Classification Identifier** - (D = Deficiency, A = ARCA). Only Deficiencies and ARCAs are included in exercise reports.
- **Exercise Issue Identification Number** - A separate two (or three) digit indexing number assigned to each issue identified in the exercise.

B. Status of Jurisdictions Evaluated

1. NEW YORK STATE

1.1 Emergency Operations Center

a. **MET:** Evaluation Area Criteria 1.a.1, 1.b.1, 1.d.1, 1.e.1
2.a.1, 2.b.1, 2.b.2, 2.c.1
3.a.1, 3.c.1
5.a.1, 5.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** ONE

Issue No.: 32-02-1.c.1-A-01

Criterion: 1.c.1

Condition: At 1112 hours, it was announced in the State Command Center, that the Governor had declared a State of Disaster Emergency for the counties of Orange, Putnam, Rockland, and Westchester and contiguous areas. The State Plan indicates that, once the State of Disaster Emergency has been declared, the State assumes the lead in decision-making and a State Coordinating Officer will be designated; however, this was not done. There was no announcement or mention to the counties that a change in the decision making process had occurred; decisions still occurred within the counties in coordination with the State Command Center even though the State EOC issued a news release (News Release No. 4, at 1:09 PM) indicating response actions were being coordinated by the Disaster Preparedness Commission.

Possible Cause: This particular process in the State Plan has not been practiced in recent drills or exercises. Specific players may not have been aware that the decision-making authority changes after a declaration of emergency has been made by the Governor for a nuclear power plant emergency.

Reference: State Plan, Section III, paragraph 2.8

Effect: Risk counties were not informed that the State was now the lead decision-maker for protective actions during the emergency response and may have been unaware that additional resources may have been available for the response.

Recommendation: When a decision is made by the Governor to declare a State

of Disaster Emergency, an announcement should be made over the Radiological Emergency Communication System (RECS line) indicating that the State is assuming overall command of response operations and is making available additional State resources. In addition, the State Plan should be reviewed to determine if this provision agrees with State law and the county plans. Annual training is required to ensure that all response personnel are aware of this procedure.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

1.2 Emergency Operations Facility

a. **MET:** Evaluation Area Criteria 1.b.1, 1.c.1, 1.d.1, 1.e.1
3.b.1
4.a.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** ONE

Issue No.: 32-02-3.a.1-A-02

Criterion: 3.a.1

Condition: The Westchester County, Rockland County, Orange County, and State Department of Health (DOH) personnel assigned to the EOF traveled through the Emergency Planning Zone, enroute to the EOF, without personnel monitoring dosimetry or potassium iodide (KI). They also were not aware of dose limits or administrative and decontamination reporting requirements.

Possible Cause: These individuals were not issued dosimetry or KI, as is required for all emergency workers.

Reference: NUREG-0654, Criteria K.3.a and J.10.e

Effect: The exposures received by these emergency workers coming to or leaving the facility would not be recorded. In addition, the EOF is not a shielded facility and these emergency workers could receive additional exposure while inside the EOF.

Recommendation: Provide all personnel assigned to the EOF a dosimetry/KI kit and training in the dose limits and reporting requirements.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

d. NOT DEMONSTRATED: NONE

e. **PRIOR ARCAs - RESOLVED:** ONE

Issue No.: 75-00-04-A-02 (1.d.1)

Description: Inoperable Utility supplied data system in Rockland, Westchester, and Orange Counties. The Utility-supplied Meteorological Information and Dose Assessment System (MIDAS) terminal and printer were inoperative in the County Emergency Operations Centers (EOCs) for much of the exercise. Problems were encountered when attempting to print the projections and plant status information that were updated every 15 minutes automatically. In addition to the printer problems, the data displayed were not always consistent with the plant status data that were being transmitted by fax from the EOF. This is a recurring problem. The Utility liaisons reported that there were problems. Considering the terrain and the potential for wind shifts, the hour-by-hour forecast information is an important tool for an effective response. (NUREG-0654, I.10; *New York State REPP*, Procedure H, *Assessment/Evaluation.*)

Corrective Action Demonstrated: The MIDAS system has been replaced by the Meteorological Radiological Plant Data System (MRP-DAS. The MRP-DAS provides technical data (containment temperature, containment pressure, containment radiation levels, stack vent release rates, and meteorological parameters) from the EOF to the State and County EOCs on a continuous basis. This system functioned properly throughout the exercise. This ARCA is resolved.

f. **PRIOR ARCAs - UNRESOLVED:** NONE

1.3 Joint News Center

a. **MET:** Evaluation Area Criteria 1.a.1, 1.b.1, 1.c.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** SEVEN

Issue No.: 32-02-1.d.1-A-03

Criterion: 1.d.1

Condition: The videoconference link in the Media Briefing room, (both audio and visual), between Orange County and the Joint News Center (JNC) was non-operational through the first three briefings.

Possible Cause: According to State personnel working on the failed link, "it is an AT&T problem, not ours."

Reference: NUREG-0654

Effect: As the videoconference equipment was located in the media briefing room in lieu of a Public Information Officer (PIO) from Orange County, the ability of the County and the media to discuss and disseminate accurate information was adversely affected. The media would have had to contact the Orange County Emergency Operations Center (EOC) directly for information, and would have received information that had not been coordinated through the JNC.

Recommendation: The videoconference equipment requires two dedicated telephone lines to allow two-way data flow for a video connection. This equipment should have been tested and the link established early for the exercise. When the link does fail to operate, a representative PIO from Orange County should be repositioned to the JNC, or a telephone conference line should be added to the media briefing room.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

Issue No.: 32-02-1.e.1-A-04

Criterion: 1.e.1

Condition: The Main Briefing room audio multi-box was non-functional throughout the exercise.

Possible Cause: The audio multi-box in the main briefing room had a problem somewhere in the wiring.

Reference: NUREG-0654, E.5, E.7

Effect: The media was unable to gather and transmit good quality audio coming from the microphone located at the front podium. Media personnel were forced to place microphones against speakers for sound. Eventually, additional microphones were added to the podium.

Recommendation: The multi-box should be tested, repaired, or replaced. A back-up wire from the podium to the rear platform could also be installed, or provide one long enough to run the length of the room, to the rear platform.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

Issue No.: 32-02-5.a.1-A-05

Criterion: 5.a.1 – Activation of the Prompt Alert and Notification System

Condition: The EAS messages and the Follow-On-News Bulletins did not provide timely, accurate information to the public. For example, the initial EAS message concluded with the phrase "Stay tuned to this Emergency Alert System station for further information and instructions." Since there was no Follow-On-News Bulletin for airing on the EAS station, and the EAS message did not contain a public inquiry number, the public would have had to wait two hours and 12 minutes until the second EAS airing at 1226 to receive the public inquiry number and further information and instructions.

Possible Cause: The staff developing the EAS messages and Follow-On-News Bulletins most likely did not develop a Follow-On-News Bulletin for the first EAS message since there were no detailed emergency instructions or protective action recommendations in the EAS message, and they did not realize that the EAS message did not include the public inquiry number.

Reference: NUREG-0654, E.5, 7

Effect: The public would have had to wait over two hours before hearing the public inquiry number. This is too long; many members of the public would have had important questions to ask of public safety officials.

Recommendation: Revise the EAS messages to include the public inquiry telephone number. Provide a Follow-On-News Bulletin for every EAS message. Provide additional training to the personnel who will compose the public information messages so that they will check to make sure that the public inquiry telephone number is broadcast in a timely fashion.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

Issue No.: 32-02-5.b.1-A-06

Criterion: 5.b.1 – Emergency Information and Instructions for the Public and the Media

Condition: There were major delays between the actual times events occurred and the times that information was given to members of the media during briefings at the Joint News Center. Specific instances are documented in press briefings # 3, 4 & 5.

- The utility spokesperson, who introduced each press briefing, in press briefing # 3 announced at 1256 that a General Emergency (GE) had been declared, but failed to explain the significance of the event. He was followed by the Westchester County spokesperson who began reading EAS message #2 at 1257, describing a Site Area Emergency at the plant. Upon completion, the Westchester County spokesperson did refer to the previously announced GE condition at the plant, but also did not offer an explanation or additional information. Near the conclusion of this briefing, the State of New York spokesperson finally expressed grave concern about the GE, but offered no guidance.

- Press briefing # 4 began at 1356 and continued until 1423. At 1358, the Westchester County spokesperson read EAS message # 3 that had aired at 1318 hours. The message stated that there was no radiation release at the plant. Actually, a radiation release had been detected at the plant at 1354.

- Press briefing # 5 began at 1456 hours. The Westchester County spokesperson announced that EAS Follow-On-News Bulletin # 3, distributed at 1338 hours – an hour and 18 minutes earlier – had inadvertently stated that there had been a radiation release at the plant. The spokesperson asked that persons holding copies of Follow-On-News Bulletin # 3 destroy them, replacing them with "revised" Follow-On-News Bulletin #3. It was later learned that the JNC personnel had been aware of the incorrect bulletin by about 1353, several minutes before press briefing #4 began. However, a decision was made to hold on to the corrected announcement for more than an hour.

Possible Cause: There were instances during the exercise when press briefings were scheduled in order to deliver specific information, but even before the information was delivered to the media, it was being superseded by new and more serious information. Decisions were made to withhold the new information until a later press briefing instead of delaying or interrupting a press briefing in order to disseminate the most current information about conditions and protective actions to the media, and, therefore, the public.

Reference: NUREG-0654; E.5, 7.

Effect: The delays between the actual times that events occurred and the times that information was given to members of the media during briefings at the Joint News Center resulted in the most urgent and needed information being delayed for up to ninety minutes until the next scheduled press briefing.

Recommendation: The plan and procedures for conduct of press briefings must be revised to permit the introduction of new information and late-breaking news if it arises shortly before or during briefings. Press briefings should be delayed or interrupted in order to disseminate the most current information and protective actions. In addition, all public information staff, particularly those who would report to the JNC, should be trained on how to manage the situation when there is new information arriving just before or during a press briefing.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

Issue No.: 32-02-5.b.1-A-07

Criterion: 5.b.1 - Emergency Information and Instructions for the Public and the Media

Condition: The Joint News Center personnel used emergency response protective area (ERPA) numbers only in announcing protective action decisions, rather than explaining the ERPAs by geographic descriptions as well.

Possible Cause: Since emergency response protective area zone numbers are published and made available to residents living within close proximity to the Indian Point Energy Center, it is assumed that all residents know "their" ERPA number, evacuation route and designated reception center. This is an unrealistic expectation. It also does not take into account how transients are given geographic information.

Reference: NUREG-0654; E.5, 7

Effect: Using ERPA zone numbers in public information, without giving the appropriate geographical information, could result in confusion on the part of residents and transients and cause them to respond incorrectly to emergency information and emergency instructions.

Recommendation: Review and revise the plan and procedures for providing protective action decision information to the public in order to clearly identify for residents and transients the area in which they are at the time of the announcement, and the correct protective actions to take at that time from that location. Provide additional training to all public information staff on the revised plan and procedures.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

Issue No.: 32-02-5.b.1-A-08

Criterion: 5.b.1 - Emergency Information and Instructions for the Public and the Media

Condition: There were discrepancies between information in the EAS messages and the Follow-On-News Bulletins as well as missing or incorrect information in the Follow-On-News Bulletins. Specifically:

- EAS message #2 did not list ERPA 9 as evacuating, yet the Follow-On-News Bulletin references the evacuation route for ERPA 9 on page 2.
- EAS message #3 stated that there had not been a release of radioactive materials, while the first issuance of Follow-On-News Bulletin #3 stated that there was a release (see below).
- Follow-On-News Bulletins #'s 3 & 4 did not contain evacuation route instructions for previously evacuated ERPAs that were still under an evacuation

directive.

- Follow-On-News Bulletin # 5 stated that all ERPAs in Putnam County were sheltered when all ERPAs in Putnam County were evacuated.

- There was no explanation in any of the Follow-On-News Bulletins that the numbers preceding each paragraph are referring to the ERPA numbers.

The Follow-On-News Bulletin for EAS message # 3 had to be retracted and revised because the Bulletin stated that there *had* been a radioactive release when there *had not been a release*. EAS message # 3 was aired (simulated) at 1318; the original Bulletin was faxed (simulated) to the EAS station at 1336. At 1428, the State Public Information Officer (PIO) informed the County PIOs that the first version of the Bulletin contained erroneous information and had been retracted and replaced by a revised Bulletin. At 1501, during briefing # 5, the Westchester County PIO told the media representatives that they were to destroy the originals of the Bulletin and pick up the revised Bulletin. This was too late to prevent confusion on the matter.

Possible Cause: The pre-scripted EAS messages do not include the public inquiry telephone number. Also, the persons composing and approving the EAS messages and Follow-On-News Bulletins did not catch the errors and discrepancies noted above.

Reference: NUREG-0654; E.5, 7

Effect: Potential confusion on the part of the media and the public on (1) what the status of the emergency situation was, (2) how to get additional information via a public inquiry number, and (3) what to do in response to the emergency situation.

Recommendation: Review and revise the Joint News Center plan and procedures to include revised pre-scripted EAS messages and Follow-On-News Bulletins. The revisions should include necessary information (such as the public inquiry number) and a method to reduce the possibility of discrepancies between the EAS messages and the Follow-On-News Bulletins. One way to do this is to provide a *series* of pre-scripted EAS messages and Follow-On-News Bulletins that are consistent with each other that would cover a variety of emergency situations and protective responses, as is found in many other radiological plans and procedures for other sites in the country. The current "One Size Fits All" pre-scripted EAS message and Follow-On-News Bulletin included in the JNC plan and procedures is not sufficient. Also, provide additional training to the personnel who will compose and approve the EAS messages and Follow-On-News Bulletins during an exercise or incident.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

Issue No.: 32-02-5.b.1-A-09

Criterion: 5.b.1 - Emergency Information and Instructions for the Public and the Media

Condition: Personnel at the Joint News Center did not explain the protective action decisions that had been made for residents and transients under the various emergency classification levels (ECLs) that were included in the EAS messages and Follow-On-News Bulletins.

Possible Cause: There may be a misconception among emergency management officials that residents understand emergency classification levels and know exactly what to do when given instructions in an EAS message and/or a Follow-On-News Bulletin, without further explanation provided at the press briefings.

Reference: NUREG-0654; E.5, E.7

Effect: A failure to completely inform residents and transients of what the emergency classification levels (ECLs) mean, and what protective action decisions are based on the ECLs, could result in the public not following appropriate and timely emergency instructions.

Recommendation: Review and revise the plan and procedures, and the text of the pre-scripted EAS messages and Follow-On-News Bulletins, to include explanations of the emergency classification levels and what they mean to the public. Provide all public information staff with additional training on the revised plan and procedures.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** THREE

Issue No.: 75-00-11-A-03 (5.b.1)

Description: The rumor control telephone number was not included in any printed information such as Special News Broadcasts, public information brochures or news releases. (NUREG-0654, G.2.c.; *2000 Joint News Center Procedures and Public Education Workplan; Planning For Emergencies*, pg.5, *Rumor Control.*)

Reason ARCA Unresolved: Although the number was announced at the media briefings, the rumor control telephone number is not printed in the Westchester, Rockland, Orange or the Putnam Counties' *Important Information on Indian Point and Planning for Emergencies* Brochure. Orange County did not publicize the public inquiry telephone number in its press releases at the Alert, SAE or the GE classification levels.

Recommendation: A listing in the public information brochure of a toll-free (800) emergency telephone number for public inquiries is necessary. It is confusing and misleading to print a toll-free (800) number for non-emergency questions and general information when it does not provide the public an immediate service during emergency situations. The plan and public information brochure should be revised to specify the dedicated public inquiry number that will be operational during an emergency. Once the predominant and significant rumors are identified, government officials must address them with the public through press releases and media briefings.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

Issue No.: 75-00-11-A-04 (5.a.1)

Description: Per joint news center procedures, "if the EAS [Emergency Alert System] message contains a PAR [Protective Action Recommendation] for evacuation or sheltering, EAS personnel from counties and state will assist in preparing a special news bulletin which expands the information contained in the EAS broadcast message. Immediately after sign-off, the Special News Bulletin is faxed to the EAS station. The EAS coordinator confirms receipt of faxed bulletin with the station." This did not occur during the exercise. There was no follow-up message or bulletin sent to the EAS station. (NUREG-0654, E.5; *2000 Joint News Center Procedures and Public Education Workplan*, pg. 4, *EAS Message Preparation Procedures.*)

Reason ARCA Unresolved: The initial EAS message did not include a Follow-

On-News Bulletin, and so none was faxed to the EAS station. Subsequent EAS messages did have Follow-On-News Bulletins, but these, in accordance with the Extent-of-Play, were also not faxed to the EAS station. Therefore, the ARCA has not been resolved.

Recommendation: Demonstrate that Follow-On-News Bulletins will be faxed to the EAS station in the event of an emergency.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

Issue No.: 75-00-12-A-05 (5.a.1)

Description: At the Joint News Center (JNC) media briefing, conducted at 1035 hours, the Westchester County Public Information Officer (PIO) announced that at 1039 hours sirens had been sounded at 1041 hours and an EAS message had been broadcast at 1044 hours. This was prior to these events. At the next media briefing at 1145 hours, the briefing was conducted during the time the second alert and notification sequence was occurring (with sirens sounded at 1150 hours and the EAS being broadcast at 1153 hours). Both of these media briefings should have been delayed until after the alert and notification activity had concluded. If these briefings had been broadcast live they could have created a great deal of confusion. (NUREG-0654, E.7; *2000 Joint News Center Procedures and Public Education Workplan*, pg. 2, *Media Briefings.*)

Reason ARCA Unresolved: As noted in the new issue #32-02-5.b.1-A-06 described above, there were, again, significant disconnects between the time that events occurred and the times that information was given to members of the media during briefings at the Joint News Center.

Recommendation: The plan and procedures for conduct of press briefings must be revised to permit the introduction of new information and late-breaking news, if it arises shortly before or during briefings. Press briefings should be delayed or interrupted in order to disseminate the most current information and protective actions. Additionally, when an alert and notification sequence is scheduled, the media briefings should be delayed until after the EAS broadcast. In addition, all public information staff, particularly those who would report to the JNC, should be trained on how to manage the situation when there is new information arriving just before or during a press briefing.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

1.4 Emergency Alert System - Station WABC

a. **MET:** Evaluation Area Criteria 5.a.1, 5.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2. RISK JURISDICTIONS

2.1 ORANGE COUNTY

2.1.1 Orange County - Emergency Operations Center

a. **MET:** Evaluation Area Criteria

1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1
2.a.1, 2.b.1, 2.b.2, 2.c.1
3..a.1, 3.b.1, 3.c.1, 3.c.2, 3.d.1, 3.d.2
4.a.2
5.a.1, 5.a.3

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** ONE

Issue No.: 32-02-5.b.1-A-10

Criterion: 5.b.1

Condition: Orange County press releases did not provide telephone numbers for the Public Inquiry Line, JNC-Media Response Desk, and the Orange County PIO.

Possible Cause: The public information function at the county emergency operations center was disrupted by failure of the video conference link with the Joint News Center.

Reference: NUREG-0654, E.5, 7; G.3.a, G.4.c

Effect: The news media and general public did not have complete information on who to contact for information on actions in Orange County.

Recommendation: Provide all public information staff with additional training to ensure that they understand which emergency information numbers should be provided to the media and the public. Develop or revise Standard Operating Procedures for preparing news releases.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.1.2 Orange County - Field Monitoring Teams

a. **MET:** Evaluation Area Criteria 1.a.1, 1.d.1, 1.e.1
3 .a.1, 3.b.1
4.a.1, 4.a.2, 4.a.3

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.1.3 **Orange County - Reception Center (Out-of-sequence at Heritage Middle School on August 1, 2002)**

a. **MET:** Evaluation Area Criteria 3.a.1; 6.a.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.1.4 Orange County - Congregate Care Center (Out-of-sequence at Twin Towers Middle School on August 20, 2002)

a. **MET:** Evaluation Area Criteria 6.c.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.1.5 Orange County - Emergency Worker Personnel Monitoring Center (Out-of-sequence at BOCES on September 19, 2002)

a. **MET:** Evaluation Area Criteria 3.a.1
6.a.1; 6.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.1.6 Orange County - Special Population Bus Company Interviews (Out-of-sequence with West Point Tours on August 15, 2002)

a. **MET:** Evaluation Area Criteria 1.d.1; 3.a.1; 3.b.1; 3.c.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.1.7 Orange County - School Bus Company Interviews (Out-of-sequence with West Point Tours on August 15, 2002)

a. **MET:** Evaluation Area Criteria 1.d.1; 3.a.1; 3.b.1; 3.c.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.1.8 Orange County - School Interviews (Out-of-sequence at James O'Neill High School on September 23, 2002)

a. **MET:** Evaluation Area Criteria 3.c.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.1.9 Orange County - Medical Drill (Out-of-sequence at Cornwall Hospital on October 24, 2002)

a. **MET:** Evaluation Area Criteria 3.a.1; 6.d.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.1.10 Orange County - Traffic Control Points

a. **MET:** Evaluation Area Criteria 3.a.1, 3.b.1, 3.d.1, 3.d.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.2 PUTNAM COUNTY

2.2.1 Putnam County - Emergency Operations Center

a. **MET:** Evaluation Area Criteria 1.b.1, 1.c.1, 1.d.1, 1.e.1
2.a.1, 2.b.1, 2.b.2, 2.c.1
3.a.1, 3.b.1, 3.c.1, 3.c.2, 3.d.1
4.a.2
5.a.1, 5.a.3, 5.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** ONE

Issue No.: 32-02-1.a.1-A-11

Criterion: 1.a.1

Condition: The initial notification to several county emergency management leaders indicated that a Site Area Emergency (SAE) had been declared; however, this was not correct: at that time an Alert had been declared.

Possible Cause: The initial notification to these personnel came from the Warning Point (WP) located in the County Supervisor Dispatch Office. The information provided to them incorrectly called the situation an SAE. This is not consistent with the initial call from the plant's Emergency Operations Facility (EOF) over the Radiological Emergency Communications System line.

Reference: NUREG-0654; E.1, E.2

Effect: Emergency workers were given incorrect information and could have made inappropriate decisions.

Recommendation: County Dispatcher/Communications personnel should participate in additional training with emphasis on accuracy.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** ONE

Issue No.: 75-00-11-A-07 (5.a.1)

Description: Emergency Alert System (EAS) message Number Four discusses how traffic control has been established to restrict access to the portion of Putnam County located within 10 miles of the plant. However, during the exercise and through interview, County officials stated that access control had not been established around any of the sheltered areas. Only two Traffic Control Points (TCPs) had been identified through Controller inject. Access to Putnam County within the EPZ was not restricted. It is noted that draft EAS messages were sent to the EOC for review and approval. Information should be verified for all activities prior to release. It is also noted that a draft message did indicate a modification that was not done by the Joint News Center. (NUREG-0654, E.5; *Putnam RERP*, Section III, *Response*, e. *Public Information.*)

Demonstrated Corrective Actions: The capability to provide accurate emergency information and instructions, including any recommended protective actions to the public and the media in a timely manner, was adequately demonstrated. After the initial EAS message, Putnam County prepared 10 press releases and supplied information to the EAS Follow-on News Releases and for the Public Information Officer (PIO) at the JNC. The first press release informed the public that the County EOC had been activated and that staff was also at the Joint News Center. Other press releases discussed the evacuation and sheltering of Emergency Response Planning Areas (ERPAs) in Putnam County, the evacuation routes, location of relocation centers, the closing of senior nutrition sites, the movement of school children out of the EPZ, the shift change of the County Executive by the Deputy County Executive, and the monitoring of the County for possible contamination.

The media releases were prepared at the JNC and faxed to the County EOC where they were given to the Executive Team for review and approval. Each member of the team reviewed each message for consistency and accuracy. Edits were made and revisions were then prepared for final approval. The releases were not signed off on until the corrections had been verified. This ARCA was successfully addressed and is closed.

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.2.2 Putnam County - Field Monitoring Teams

a. **MET:** Evaluation Area Criteria 1.a.1, 1.d.1, 1.e.1
3.a.1, 3.b.1
4.a.1, 4.a.2, 4.a.3

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** THREE

Issue No.: 75-00-06-A-08 (4.a.1)

Description: Procedure 4, Attachment 4 of the *Putnam County Radiological Emergency Response Plan* calls for performing a source check on the RO-2A instrument using a cesium-137 check source, as indicated in Section 1.1.3 under *Radiation Survey Techniques* (p. D-21). Also, Procedure 4, Attachment 4, Section 2.3 under *Airborne Survey Techniques* (p. D-22) calls for doing a source check on the Eberline RM-14 meter using the cesium-137 check source. Neither of the prescribed source checks was performed by Field Monitoring Team A. (NUREG-0654, H.10; *Putnam County RERP*, Procedure 4, *Radiological Officer*, Attachment 4, *Field Monitoring*.)

Demonstrated Corrective Actions: Field Team A did a thorough check of both the RO-2A instrument and the Eberline RM-14 meter and their back-ups using a cesium-137 check source.

The Putnam County Radiological Monitoring Team B performed source checks on their instruments to ensure correct instrument response. On both the RO-2A and RM-14 instruments, a cesium-137 source (5 uCi-1998) was used and both instruments operated correctly.

Issue No.: 75-00-08-A-09 (4.a.1)

Description: Putnam County Field Team B's RM-14 instrument alarm and flashing light could not be turned off during check out, however, the team continued to use the instrument in the field. Under these conditions, accuracy of results and operability of the instrument would be questionable. (NUREG-0654, H.10; *Putnam County RERP*, Procedure 4, *Radiological Officer*, Attachment 4, *Field Monitoring*, p. D-23.)

Demonstrated Corrective Actions: Field Team A did a thorough check of both the RO-2A instrument and the Eberline RM-14 meter and their back-ups using a cesium-137 check source. All four instruments were in proper working order. The back-up detectors were taken to the field in case of malfunction.

The Putnam County Radiological Monitoring Field Team B employed an RM-14 instrument that was correct in its response and functioned properly with its audio and visual alarms.

Issue No.: 75-00-08-A-10 (4.a.1)

Description: Field Team B did not protect the detector from contamination during particulate air monitoring. It is standard practice for a field monitoring team to cover a detector with thin, transparent plastic during particulate filter measurements in order to protect the instrument from contamination and to avoid erroneous readings. (NUREG-0654, I.9; *Putnam County RERP*, Procedure 4, *Radiological Officer*, Attachment 4, *Field Monitoring*, pp. D-19 and D-23.)

Demonstrated Corrective Actions: Field Team A covered the probes for the two RO-2A radiation detectors with a thin layer of plastic to protect the instruments from contamination causing erroneous readings.

The Putnam County Radiological Monitoring Field Team B, in its three air sample collections and subsequent measurements, always employed a thin plastic probe cover during particulate filter measurements.

f. PRIOR ARCAs - UNRESOLVED: NONE

2.2.3 Putnam County - Reception Center (Out-of-sequence at Carmel High School on July 30, 2002)

a. **MET:** Evaluation Area Criteria 3.a.1; 6.a.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.2.4 Putnam County - Congregate Care Center (Out-of-sequence at George Fischer Middle School on July 30, 2002)

a. **MET:** Evaluation Area Criteria 6.c.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.2.5 **Putnam County - Emergency Worker Personnel Monitoring Center (Out-of-sequence at the Carmel Fire Department on April 30, 2002)**

a. **MET:** Evaluation Area Criteria 3.a.1; 6.a.1, 6.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.2.6 Putnam County - Special Population Bus Company Interviews (Out-of-sequence at the Haldane School District, the Mahopac School District, and the Garrison District on April 18 and June 19, 2002)

a. **MET:** Evaluation Area Criteria 1.d.1; 3.a.1, 3.c.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.2.7 Putnam County - School Bus Company Interviews (Out-of-sequence at the Putnam Valley School District and the Hudson Valley buses on May 2 and June 12, 2002)

a. **MET:** Evaluation Area Criteria 1.d.1; 3.a.1; 3.b.1; 3.c.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.2.8 Putnam County - School Interviews (Out-of-sequence at Garrison U.F.E.S., Putnam Valley Middle School/High School, and Bonous Montessori on May 2, May 23 and June 12, 2002)

a. **MET:** Evaluation Area Criteria 3.c.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.2.9 **Putnam County - Medical MS-1 Drill (Out-of-sequence at Putnam Hospital on May 15, 2002)**

a. **MET:** Evaluation Area Criteria 3.a.1; 6.d.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.2.10 Putnam County – Traffic Control Points

a. **MET:** Evaluation Area Criteria 3.a.1, 3.b.1, 3.d.1, 3.d.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.3 ROCKLAND COUNTY

2.3.1 Rockland County - Emergency Operations Center

a. **MET:** Evaluation Area Criteria 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1
2.a.1, 2.b.1, 2.b.2, 2.c.1
3.a.1, 3.b.1, 3.c.1, 3.c.2, 3.d.1, 3.d.2
4.a.2
5.a.1, 5.a.3, 5.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** ONE

Issue No.: 75-00-03-A-11 (1.c.1)

Description: Rockland County did not keep Bergen County abreast of important information and developments. For example, Rockland County did not notify Bergen County that an SAE had been declared until after notifying Bergen that a GE had been declared. Bergen County learned of the SAE only after calling back to Rockland to confirm the GE. In addition, Bergen County was only notified of the first siren activation and EAS message. No notice was given of the final three activations and messages, nor was Bergen County notified of the termination of the radioactive release. (NUREG-0654, A.1.d., 2.a.,b.; *Rockland County REPP*, Procedure RC/BC-1, *Rockland County/Bergen County Liaisons*, Section 5.3.1, *EOC Operations*.)

Reason ARCA Unresolved: Rockland County did not provide information to Bergen County in a timely manner. Information to Bergen County from Rockland County was obtained only in response to direct requests to Rockland County from the Bergen County EOC. The Liaison from the Rockland County Sheriff's Office arrived and immediately stated that he had only been directed to perform this duty 48 hours previously. He further stated that he had received no training for the task he was about to undertake and that he had been told to report to the Bergen County EOC Director who would tell him what to do. Ultimately, the Bergen County EOC Director asked the Rockland County Liaison to call the Rockland County EOC for updates every 15 minutes.

In addition, the Bergen County liaisons within the Rockland County EOC also indicated that they were new to this assignment and unfamiliar with their responsibilities and the plan. For example, the Rockland County Operations Chief had to speak directly to the liaison in Bergen County to pass information to Bergen County, because the liaisons within the Rockland EOC did not know what information to pass on: the decision to activate school reception centers, and congregate care centers (which are in Bergen County) was not communicated to Bergen County.

Recommendation: Review and revise the Rockland County Plan and Procedures for communication with Bergen County. Review and revise the plan and procedures for Bergen County. Train all personnel who will have duties providing communications between Rockland and Bergen Counties.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

2.3.2 Rockland County - Field Monitoring Teams

a. **MET:** Evaluation Area Criteria 1.a.1, 1.d.1, 1.e.1
3.a.1, 3.b.1
4.a.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** TWO

Issue No: 32-02-4.a.2-A-12

Criterion: 4.a.2

Condition: Field Monitoring Team #1 was not informed of key information in accordance with Radiological Emergency Response Agency Procedure, DOH-7, "Field Monitoring Team Coordinator," Section 5.4.9.

Possible Cause: Periodic contacts with Field Monitoring Team #1 did not request acknowledgement from the team that appropriate information designated in the procedure was received.

Reference: NUREG-0654, I.8., 11.

Effect: Information related to protective actions taken is essential for field teams supporting plume tracking, contamination control, and management of radiological exposures.

Recommendation: EOC staff involved in transmission of information to field teams should carefully follow the designated procedure and request acknowledgements from field teams that they are aware of prescribed information affecting field activities.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

Issue No: 32-02-4.a.3-A-13

Criterion: 4.a.3

Condition: After completing the air sample with the Air Sampler H-809C, a field team member placed the uncovered filter and cartridge on the radiator grill area

adjacent to the battery, causing cross contamination from the vehicle surface to the filter and cartridge.

Through interview, the team simulated moving to a low background area to survey the filter and cartridge. A team member placed the Ludlum 14C survey instrument (pancake probe) directly on the contaminated filter and cartridge while surveying the samples.

The Air Sampler H-809C and the Eberline RO-2A were placed in the same plastic bag as was used for personal protective clothing and equipment.

Though the filter and cartridge samples were properly bagged and labeled, they were placed in the field team kit without being monitored.

Possible Cause: The Rockland County Emergency Preparedness Radiological Response Plan and support procedures did not adequately address contamination control of samples during collection and transfer. The instrumentation operation procedures within the plan did not adequately detail contamination control procedures with regards to instrument usage and storage during field operations.

Reference: NUREG-0654, I.9

Effect: The lack of contamination control in the control and transfer of field samples could result in the Field Monitoring Team relaying incorrect exposure information to Dose Assessment at the EOC, thus altering the Rockland County Protective Action Decisions.

Recommendation: Additional training of the Field Monitoring Team and further clarification of the sampling and contamination reduction procedures should be considered. The Field Team Procedures and other portions of the field kit should not be placed on the ground or under the hood during sampling. To reduce general cross contamination during field operations, the team should place the air sampler and the Eberline RO-2A in separate individual plastic bags.

The Air Sampler H-809C, Ludlum 14C, and Eberline RO-2A survey techniques contained in the Rockland County Emergency Preparedness Radiological Response Plan Standard Operating Procedures (DOH 11, Attachment 4, pp. 11-13) should be updated to include detailed information on general field team and instrument specific cross-contamination techniques.

Schedule of Corrective Actions:

The State has not submitted a Schedule of Corrective Actions.

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.3.3 Rockland County - Reception Center (Out-of-sequence at Suffern High School on August 1, 2002)

a. **MET:** Evaluation Area Criteria 3.a.1; 6.a.1, 6.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** ONE

Issue No.: 75-00-18-A-12 (6.2.1)

Description: There was only one female monitor for the female shower at the Tappan Zee Reception Center and two are required (per Rockland County Procedures and the Extent-of-Play Agreement). (NUREG-0654, J.10.h., 12; *Rockland County REPP*, Procedure DOH-2, *Personnel Monitoring Centers*, Section 5.1.1.)

Recommendation: Additional female monitors should be trained to assure staffing for the female decontamination area is sufficient.

Demonstrated Corrective Action: At the Reception Center demonstration at Suffern High School on August 19, 2002, there were two male and two female workers to provide decontamination to male and female individuals.

f. **PRIOR ARCAs - UNRESOLVED:** ONE

Issue No.: 75-00-18-A-13 (6.2.1)

Description: Holding areas in the cafeteria at the Tappan Zee Reception Center are not designated for evacuees awaiting transportation to shelters or private transportation. (NUREG-0654, J.12; *Rockland County REPP*, Procedure DSS-2, *Department of Social Services Emergency Response Actions*, Section 5.3.3.)

Recommendation: The diagram of the reception center should include designated areas for evacuees awaiting transportation to shelters or private transportation.

Demonstrated Corrective Action: FEMA has not yet received an updated diagram of the Tappan Zee Reception Center Reception Center.

2.3.4 Rockland County - Congregate Care Center (Out-of-sequence at Bergen Community College, Fairleigh Dickinson University, and Ramapo College on September 4 and September 9, 2002)

a. **MET:** Evaluation Area Criteria 6.c.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.3.5 Rockland County - Emergency Worker Personnel Monitoring Center (Out-of-sequence at the County Sewer District offices on June 25, 2002)

a. **MET:** Evaluation Area Criteria 3.a.1; 6.a.1, 6.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.3.6 Rockland County - Special Population Bus Company Interviews (Out-of-sequence at Chestnut Ridge, Clarkstown Central School District, Haverstraw, and Peter Brega on June 11 – 14, 2002)

a. **MET:** Evaluation Area Criteria 1.d.1; 3.a.1, 3.b.1, 3.c.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.3.7 Rockland County - School Bus Company Interviews (Out-of-sequence at Chestnut Ridge, Clarkstown Central School District, Haverstraw, and Peter Brega on June 11 - 14, 2002)

a. **MET:** Evaluation Area Criteria 1.d.1; 3.a.1, 3.b.1, 3.c.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.3.8 Rockland County - School Interviews (Out-of-sequence at St Paul's School, Clarkstown Senior High School, James A. Farley Middle School, Lime Kiln Elementary School, and Robin Hill School on May 28, June 10, and September 18, 2002)

a. **MET:** Evaluation Area Criteria 3.c.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.3.9 Rockland County - Medical Drill (Out-of-Sequence at Good Samaritan Hospital on May 4, 2001)

a. **MET:** Evaluation Area Criteria 3.a.1; 6.d.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.3.10 Rockland County -Traffic Control Points

a. **MET:** Evaluation Area Criteria 3.a.1, 3.b.1, 3.d.1, 3.d.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.4 WESTCHESTER COUNTY

2.4.1 Westchester County - Emergency Operations Center

a. **MET:** Evaluation Area Criteria

1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1
2.a.1, 2.b.1, 2.b.2, 2.c.1
3.a.1, 3.b.1, 3.c.1, 3.c.2, 3.d.1, 3.d.2
4.a.2
5.a.1, 5.a.3, 5.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.4.2 Westchester County - Field Monitoring Teams

a. **MET:** Evaluation Area Criteria 1.a.1, 1.d.1, 1.e.1
3.a.1, 3.b.1
4.a.1, 4.a.2, 4.a.3

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.4.3 Westchester County - Reception Center (Out-of-sequence at Westchester Community College on August 14, 2002)

a. **MET:** Evaluation Area Criteria 3:a.1; 6.a.1, 6.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.4.4 **Westchester County - Congregate Care Center (Out-of-sequence at Westchester Community College on August 14, 2002)**

a. **MET:** Evaluation Area Criteria 6.c.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.4.5 Westchester County -Emergency Worker Personnel Monitoring Center (Out-of-sequence at the Fire Training Center on July 19, 2002)

a. **MET:** Evaluation Area Criteria 3.a.1; 6.a.1, 6.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.4.6 Westchester County - Special Population Bus Company Interviews (Out-of-sequence with Liberty Lines and Royal Coach on September 10, 2002)

a. **MET:** Evaluation Area Criteria 1.d.1; 3.a.1, 3.b.1, 3.c.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.4.7 Westchester County - School Bus Company Interviews (Out-of-sequence at the Hendrick Hudson School District, Liberty Lines, and the Lakeland Central School District on September 10, September 16, and September 19, 2002)

a. MET: Evaluation Area Criteria 1.d.1; 3.a.1, 3.b.1, 3.c.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.4.8 Westchester County - School Interviews (Out-of-sequence at Hillcrest Elementary School, Buchanan-Verplanck Elementary School, Pinesbridge School, Briarcliff High School, Croton-Harmon High School, Benjamin Franklin Elementary School, St. Ann's School, West Orchard Elementary School, and St. Patrick's School on June 10, June 12-14, and June 17, 2002)

a. **MET:** Evaluation Area Criteria 3.c.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.4.9 Westchester County - Medical MS-1 Drill (Out-of-sequence at Westchester Medical Center on June 11, 2002)

a. **MET:** Evaluation Area Criteria 3.a.1; 6.d.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** ONE

Issue No.: 75-00-21-A-26 (6.d.1)

Description: The Medical team failed to isolate and control radioactive contamination within the treatment room. The patient was brought on an ambulance gurney into a Radiological Emergency Treatment Area (RETA) within the Westchester County Medical Center and immediately transferred onto a hospital treatment table. The initial radiological scanning of the patient was performed on this table, while the patient was still fully clothed, immediately after his vital signs had been checked and Demerol had been administered. This scanning revealed radiological contamination was present. The patient was undressed (his clothing was cut away) and rescanned. Radiological contamination was still present. The medical team spent approximately one hour attempting to determine the location and extent of radiological contamination, without success. At this point, the Drill Controller intervened in order to continue the drill and advised the Medical team that they had contaminated the treatment area by transferring the patient from the gurney without first undressing him. The Drill Controller also gave the Medical team some suggestions on how to properly scan the patient in order to determine the extent of contamination. (NUREG-0654, L.1; Rockland County REPP, p. III-38, Section 12, Hospitals and Medical Facilities, Procedure EMS-2, *Handling and Transport of Contaminated and/or Injured Individuals to Medical Facilities.*)

Recommendation: The Medical team at the Westchester County Medical Center should be given additional training in techniques to identify and control radioactive contamination.

Demonstrated Corrective Actions: The attending Physician and his medical team clearly and repeatedly demonstrated an awareness of the importance of contamination control. The radiological monitor closely checked for contamination on all surfaces, starting with the ambulance and continuing into the radiological treatment area within the hospital. The Physician repeatedly asked to have his

hands scanned for contamination and frequently changed his gloves and, as necessary, his gown. Procedures and checklists for treatment and contamination control were prominently posted within the radiological treatment area. The Physician and the medical support team repeatedly referred to these displays and highlighted (marked) completed steps. The patient was successfully transferred from the ambulance gurney to a treatment table without any cross contamination.

f. PRIOR ARCAs - UNRESOLVED: NONE

2.4.10 Westchester County - Traffic Control Points

a. **MET: Evaluation Area Criteria** 3.a.1, 3.b.1, 3.d.1, 3.d.2

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

2.4.11 Westchester County – Equipment Inventory (Out-of-sequence at the County Fire Training Center, Westchester Community College, and the County Health Department on July 19, 2002, August 14, 2002, and September 24, 2002)

a. **MET:** Evaluation Area Criteria 1.e.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

3. SUPPORT COUNTY

3.1 Bergen County - Emergency Operations Center

a. **MET:** Evaluation Area Criteria 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1
3.a.1, 3.b.1, 3.c.1, 3.c.2, 3.d.1, 3.d.2
5.b.1

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

APPENDIX 1

ACRONYMS AND ABBREVIATIONS

The following is a list of the acronyms and abbreviations that were used in this report.

ACP	Access Control Point
ANL	Argonne National Laboratory
ARC	American Red Cross
ARCA	Area Requiring Corrective Action
ARES	Amateur Radio Emergency Service
BCEOC	Bergen County Emergency Operations Center
BCFA	Bergen County Field Activities
BOCES	Board of Cooperative Educational Services
CFR	Code of Federal Regulations
CPM	Counts Per Minute
DOE	U.S. Department of Energy
DOH	Department of Health
DOT	U.S. Department of Transportation
EAL	Emergency Action Level
EAS	Emergency Alert System
ECL	Emergency Classification Level
EMS	Emergency Medical Service
EMO	Emergency Management Organization
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPA	U.S. Environmental Protection Agency
EPZ	Emergency Planning Zone
ERF	Emergency Response Facility
ERPA	Emergency Response Planning Area
EV-2	REP School Interview Questionnaire
EWPMC	Emergency Worker Personnel Monitoring Center
FAA	Federal Aviation Administration
FDA	U.S. Food and Drug Administration
FEMA	Federal Emergency Management Agency

GE	General Emergency
HELP	Helicopter Emergency Lift Program
ICF	ICF Consulting, Inc.
INEEL	Idaho National Environmental and Engineering Laboratory
IP2	Indian Point 2
IPNPS	Indian Point Nuclear Power Station
JNC	Joint News Center
KI	Potassium Iodide
MIDAS	Meteorology Information and Dose Assessment System
mR	MilliRoentgen
MRP-DAS	Meteorological Radiological Plant Data System
NOUE	Notification of Unusual Event
NRC	U.S. Nuclear Regulatory Commission
NUREG-0654	NUREG-0654/FEMA-REP-1, Rev. 1, *"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980*
NYS	New York State
NYSEMO	New York State Emergency Management Office
OCEOC	Orange County Emergency Operations Center
OCFA	Orange County Field Activities
ORO	Offsite Response Organization
PAR	Protective Action Recommendation
PCEOC	Putnam County Emergency Operations Center
PEARL	Putnam County Emergency Amateur Repeater League
PIO	Public Information Officer
PMC	Personnel Monitoring Center
PSC	New York State Public Service Commission
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Service
RCEOC	Rockland County Emergency Operations Center
RCFA	Rockland County Field Activities
REA	Radiological Emergency Treatment Area
RECS	Radiological Emergency Communications System

REP	Radiological Emergency Preparedness
REPP	Radiological Emergency Preparedness Plan
RERP	Radiological Emergency Response Plan
RETA	Radiological Emergency Treatment Area
SAE	Site Area Emergency
SEMO	State Emergency Management Office
SEOC	State Emergency Operations Center
TCP	Traffic Control Point
TDD	Telephone Device for the Deaf
TEDE	Total Effective Dose
TL	Team Leader
TLD	Thermoluminescent Dosimeter
USDA	U.S. Department of Agriculture
WCEOC	Westchester County Emergency Operations Center
WCFA	Westchester County Field Activities

APPENDIX 2

EXERCISE EVALUATORS AND TEAM LEADERS

The following is a list of the personnel who evaluated the Indian Point 3 exercise on September 24, 2002. Evaluator Team Leaders are indicated by the letters "(TL)" after their names. The organization which each evaluator represents is indicated by the following abbreviations:

DOT	- Department of Transportation
EPA	- Environmental Protection Agency
FEMA	- Federal Emergency Management Agency
ICF	- ICF Consulting
INEEL	- Idaho National Environmental and Engineering Laboratory
NRC	- Nuclear Regulatory Commission
USDA	- US Department of Agriculture

	NAME	ORGANIZATION
RAC Chairperson	R. Reynolds	FEMA
Project Officer	P. Malool	FEMA

EVALUATION SITE	EVALUATOR	ORGANIZATION
NEW YORK STATE		
Emergency Operations Center (EOC)	R. Poole	FEMA (TL)
	L. Record	FEMA
	K. McCarroll	FEMA
	B. Edmonson	ICF
	N. Gaeta	ICF
Emergency Operations Facility (EOF)	R. Black	ICF
Joint News Center (JNC)	R. Echavarria	FEMA (TL)
	N. Goldstein	FEMA
	D. Jacks	FEMA
	P. Tenorio	FEMA
	P. Nied	ICF
EAS Station WABC	B. Vocke	ICF

EVALUATION SITE	EVALUATOR	ORGANIZATION
RISK JURISDICTIONS		
Orange County		
Orange County EOC	P. Malool	FEMA (TL)
	N. Tang	FEMA
	S. O'Neill	FEMA
	H. Berry	ICF
	A. Thompson	FEMA
Field Monitoring Team	T. Mignone	HHS
	Eric Simpson	EPA
Traffic Control Point	S. O'Neill	FEMA
Putnam County		
Putnam County EOC	J. Young	FEMA (TL)
	N. Brignoni	FEMA
	M. Matia	FEMA
	Daryl Thome	ICF
Field Monitoring Team	S. Nelson	ICF
	J. Staroba	ICF
Traffic Control Point	M. Matia	FEMA
Rockland County		
Rockland County EOC	K. Reed	FEMA (TL)
	A. Canida	FEMA
	R. Ohlsen	FEMA
	A. Davis	FEMA
	H. Harrison	ICF
Field Monitoring Team	C. Gordon	USNRC
	T. Brown	ICF
Traffic Control Point	A. Davis	FEMA

EVALUATION SITE	EVALUATOR	ORGANIZATION
Westchester County		
Westchester County EOC	B. Hasemann	FEMA (TL)
	L. Visniesky	ICF
	D. Petta	USDOT
	K. Barrett	USDA
	J. Keller	ICF
Field Monitoring Team	J. Eng	EPA
	R. Bernacki	FDA
Traffic Control Points	L. Visniesky	ICF
Bergen County		
Bergen County EOC	W. Dobinson	FEMA (TL)
Emergency Operations Center	J. Flynn	ICF

OUT-OF-SEQUENCE ACTIVITIES

EVALUATION SITE	EVALUATOR	ORGANIZATION
Orange County		
Reception Center (August 1, 2002)	S. O'Neill	FEMA
Congregate Care Center	P. Malool &	FEMA
(August 20, 2002)	S. O'Neill	FEMA
Emergency Worker PMC (September 19, 2002)	S. O'Neill	FEMA
Special Pop. Bus Company Interviews (August 15, 2002)	S. O'Neill	FEMA
School Bus Company Interviews (August 15, 2002)	S. O'Neill	FEMA

EVALUATION SITE	EVALUATOR	ORGANIZATION
School Interview (September 23, 2002)	S. O'Neill	FEMA
Medical Drill (MS-1) (June 11, 2002)	B. Hasemann P. Malool	FEMA FEMA
Putnam County		
Reception Center (July 30, 2002)	S. O'Neill K. Reed	FEMA FEMA
Congregate Care Center (July 30, 2002)	S. O'Neill	FEMA
Emergency Worker PMC (April 30, 2002)	Jaye Sutton	FEMA
Special Pop. Bus Company Interviews (April 18 and June 19, 2002)	Susan O'Neill Jaye Sutton	FEMA FEMA
School Bus Company Interviews (May 2 and June 12, 2002)	Jaye Sutton	FEMA
School Interviews (May 2, 23, and June 12, 2002)	Jaye Sutton	FEMA
Medical Drill (MS-1) (May 15, 2002)	Paul Malool Kevin Reed Jaye Sutton	FEMA FEMA FEMA

EVALUATION SITE	EVALUATOR	ORGANIZATION
Rockland County		
Reception Center (August 19, 2002)	R.Black	ICF
Congregate Care Centers (September 4 and 9, 2002)	R. Reynolds P. Malool K. Reed	FEMA FEMA

Emergency Worker PMC (June 25, 200)	R. Black K. Reed	ICF FEMA
Special Pop. Bus Company Interviews (June 11-14, 2002)	R. Black	ICF
School Bus Company Interviews (June 11 – 14, 2002)	R. Black	ICF
School Interviews (May 28, June 10, and September 18, 2002)	K. Reed P. Malool	FEMA FEMA
Medical Drill (MS-1)	Paul Malool	FEMA
Westchester County		
Reception Center (August 14, 2002)	B. Hasemann	FEMA
Congregate Care Center (August 14, 2002)	B. Hasemann	FEMA
Emergency Worker PMC (July 19, 2002)	B. Hasemann	FEMA

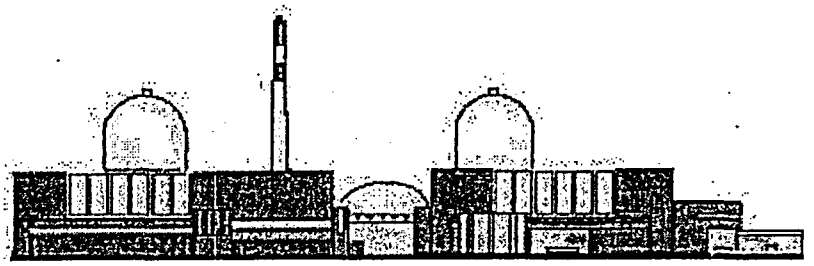
EVALUATION SITE	EVALUATOR	ORGANIZATION
Special Pop. Bus Company Interviews (September 10, 2002)	B. Hasemann	FEMA
School Bus Company Interviews (September 10, 16, and 19, 2002)	B. Hasemann	FEMA
School Interviews (June 10, 12, 13, 14, and 17, 2002)	B. Hasemann	FEMA
Medical Drill (MS-1) (June 11, 2002)	B. Hasemann P. Malool	FEMA FEMA

APPENDIX 3

EXERCISE OBJECTIVES AND EXTENT-OF-PLAY AGREEMENT

INDIAN POINT 2
NUCLEAR POWER STATION

SEPTEMBER 24, 2002



FINAL

OFFSITE EXTENT-OF-PLAY

FOR THE

SEPTEMBER 24, 2002

INDIAN POINT 2 FULL-PARTICIPATION

EXERCISE

EXTENT-OF-PLAY GROUND RULES

- **REAL LIFE EMERGENCIES TAKE PRIORITY OVER EXERCISE PLAY.**

- The Scenario Development Team will develop the free play messages. The State Controller will inject the message to the County Emergency Management Director or his designee for action.

- Free play messages for Public Inquiry at the Joint News Center (JNC) will be developed by the Scenario Development Team. Rumor control messages will be injected at the JNC by a control cell.

- The State Controller will inject radiological data for any radiological field activities (Field Teams, Emergency Worker Personnel Monitoring Centers, Reception Centers).

- According to REP Program Strategic Review Initiative 1.5, "During tabletop exercises, drills and other demonstrations conducted out-of-sequence from an integrated exercise, if FEMA and the offsite response organizations (ORO) agree, the FEMA Evaluator may have the participants re-demonstrate an activity that is determined to be not satisfactorily demonstrated. Immediate correction of issues in an integrated exercise is authorized only if it would not be disruptive and interrupt the flow of the exercise and affect other Evaluation Areas." This initiative is <u>not</u> applicable to Emergency Operations Center/Joint News Center/Emergency Operations Facility demonstrations during the September 24, 2002 exercise.

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.a – Mobilization

Criterion 1.a.1: OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654, A.4; D.3, 4; E.1, 2; H.4)

WARNING POINTS

Extent-of-Play Agreement:

- The latest quarterly revised call lists will be provided at the Federal/State evaluators briefing session the day before the exercise, if requested by FEMA. The lists will contain the business telephone numbers only.

- There will be no free play messages introduced at the Warning Points.

EOCs

Extent-of-Play Agreement:

- State liaisons will be pre-positioned in the area and will arrive at County Emergency Operations Centers (EOCs) 30 minutes after the ALERT or greater Emergency Classification Level (ECL) notification is received by the State. Utility Technical Liaisons assigned to the State EOC will be pre-positioned and arrive at the State EOC 30 minutes after the ALERT or greater ECL notification.

EOF

Extent-of-Play Agreement:

- State liaisons will be pre-positioned in the area and will arrive at the EOF 30 minutes after the ALERT or greater ECL notification is received by the State.

JNC

Extent-of-Play Agreement:

- State Joint News Center (JNC) Staff will be pre-positioned and arrive at the JNC 30 minutes after the ALERT or greater ECL notification is received by the State.

- Orange County will utilize a videoconferencing link from the County EOC to the JNC. The

Orange County Public Information Officer (PIO) will be present at the County EOC.

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.b – Facilities

Criterion 1.b.1: Facilities are sufficient to support the emergency response. (NUREG-0654, H.3)

Extent-of-Play Agreement:

- Back-up power is available, but will not be activated, for the State, four Risk County EOCs, and Bergen County. EOC.
- Maps and displays will vary with each facility and may include printouts and listings.
- Additional baseline facility evaluations, outside of those detailed in the Offsite Extent-of-Play Activities Schedule, will be conducted after the exercise as agreed to by FEMA, New York State Emergency Management Office (NYSEMO) and each County Emergency Management Office (EMO).

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.c - Direction and Control

Criterion 1.c.1: Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654, A.1.d; A.2.a., b)

Extent-of-Play Agreement:

- The State Controller will inject free play messages to the County Emergency Management Director or designee for action.
- Public Inquiry messages will be injected at the JNC by a "control cell."

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.d – Communications Equipment

Criterion 1.d.1: At least two communication systems are available, at least one operates properly, and communication links are established and maintained with appropriate locations. Communications capabilities are managed in support of emergency operations. (NUREG-0654, F.1, 2)

Extent-of-Play Agreement:

- The use of RACES as a back up to commercial telephones or radios will be demonstrated between the State and four Risk County EOCs only.

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.e – Equipment and Supplies to Support Operations

Criterion 1.e.1: Equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654, H.7, 10; J.10.a, b, e, J.11; K.3.a)

Extent-of-Play Agreement:

- Maps and displays will vary with each facility and may include printouts and listings.
- The instruments that are used for field monitoring are the RO-2A (Gamma and Beta-milliRoentgen per hour [mR/hr] or Roentgen per hour [R/hr]) or equivalent and RM-14 (Gamma and Beta – Counts Per Minute [CPM)] or equivalent.
- Field team equipment is calibrated by Indian Point 2's (IP2) Radiation Protection Department. An internal IP2 requirement provides for calibration of this equipment every six months. Therefore, the calibration sticker for this equipment shows a "calibration due date" which reflects the six month calibration schedule. The instruments are considered calibrated as long as the current date is within one year of the calibration date.
- No equipment (Barriers, Traffic cones, Signs, etc.) will be deployed to the field.

EVALUATION AREA 2: PROTECTIVE ACTION DECISION MAKING

Sub-element 2.a – Emergency Worker Exposure Control

Criterion 2.a.1: OROs use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of KI, is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides. (NUREG-0654, J.10.e, f; K.4)

Extent-of-Play Agreement:

- All activities will be based on the ORO's plans and procedures as they would in an actual emergency.

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

Sub-element 2.b – Radiological Assessment and Protective Action Recommendations and Decisions for the Plume Phase of the Emergency

Criterion 2.b.1: Appropriate protective action recommendations are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions. (NUREG-0654, I.8, 10; Supplement 3).

Extent-of-Play Agreement:

- Plume centerline data will be provided by the licensee field teams.

EVALUATION AREA 2: PROTECTIVE ACTION DECISION MAKING

Sub-element 2.b – Radiological Assessment and Protective Action Recommendations and Decisions for the Plume Phase of the Emergency

Criterion 2.b.2: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PADs) for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654, J.9, 10.f, m)

Extent-of-Play Agreement:

- An alternate to the Executive Hotline may be used to coordinate protective action decisions (PADs) among the Risk Counties and State.
- The New York State (NYS) policy regarding the use of KI for the general public is under revision.

EVALUATION AREA 2: PROTECTIVE ACTION DECISION MAKING

Sub-element 2.c - Protective Action Decisions Consideration for the Protection of Special Populations

Criterion 2.c.1: Protective action decisions are made, as appropriate, for special population groups. (NUREG-0654, J.9, J.10.d, e)

TRANSPORTATION DEPENDENT POPULATION

Extent-of-Play Agreement:

- During the September 24, 2002 exercise, there will be initial contact with the transportation providers (telephone call) by the Transportation Coordinator. Initial contacts will be actual and some follow-up contacts may be simulated. All calls will be logged at each EOC.

- There will be no actual dispatch of vehicles during the exercise.

NOTIFICATION OF HEARING-IMPAIRED

Extent-of-Play Agreement:

- The hearing-impaired list will be available for inspection at each respective EOC. The list will be reviewed but not retained by the Federal evaluator.

- There will be no actual notification of hearing-impaired individuals during the exercise.

NON-INSTITUTIONALIZED MOBILITY-IMPAIRED INDIVIDUALS

Extent-of-Play Agreement:

- The list of non-institutionalized mobility-impaired individuals will be available for inspection at each respective EOC. The lists will be reviewed but not retained by the Federal evaluator.

- There will be no actual dispatch of vehicles for transport of non-institutionalized mobility-impaired individuals.

- During the exercise, there will be no actual contact of non-institutionalized mobility-impaired individuals identified on the list.

SCHOOLS

Extent-of-Play Agreement:

- During the September 24, 2002, exercise, there will be initial contact with the schools and transportation providers (telephone call) by the School and Transportation Coordinators. Initial contacts will be actual and some follow-up contacts may be simulated. All calls will be logged at each EOC.

SPECIAL FACILITIES

Extent-of-Play Agreement:

- During the exercise, there will be initial contact with the special facilities (telephone call). Initial contacts will be actual and some follow-up contacts may be simulated. All calls will be logged at each EOC.

- There will be no actual dispatch of vehicles to the special facilities.

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

Sub-element 2.d –Radiological Assessment and Decision Making for the Ingestion Exposure Pathway

Criterion 2.d.1: Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO planning criteria. (NUREG-0654, J.9, J.11)

Not to be demonstrated during this exercise.

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

Sub-element 2.e – Radiological Assessment and Decision-Making Concerning Relocation, Re-entry, and Return

Criterion 2.e.1: Timely relocation, re-entry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the ORO's plan and/or procedures. (NUREG-0654, I.10; J.9; M.1)

Not to be demonstrated during this exercise.

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.a – Implementation of Emergency Worker Exposure Control

Criterion 3.a.1: The OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plans and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. (NUREG-0654, K.3.a, b)

Extent-of-Play Agreement:

- All activities will be based on the ORO's plans and procedures as they would in an actual emergency.

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.b – Implementation of KI Decision

Criterion 3.b.1: KI and appropriate instructions are made available should a decision to recommend use of KI be made. Appropriate record keeping of the administration of KI for emergency workers and institutionalized (not the general public) individuals is maintained. (NUREG-0654, J.10.e)

Extent-of-Play Agreement:

- The NYS policy regarding the use of KI for the general public is under revision.

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.c – Implementation of Protective Actions for Special Populations

Criterion 3.c.1: Protective action decisions are implemented for special populations other than schools within areas subject to protective actions. (NUREG-0654, J.10.c, d, g)

EVACUATION OF TRANSPORTATION DEPENDENT POPULATION

Extent-of-Play Agreement:

- Bus companies will be interviewed prior to the September 24, 2002, exercise as per the Offsite Extent-of-Play Activities Schedule. Additional bus company interviews will be conducted after the exercise as agreed to by FEMA, NYSEMO, and each County EMO.

- Each company will provide a dispatcher and at least five to 10 percent of that company's drivers for interview.

- A State Controller will provide the bus routes to be discussed to the bus dispatcher for the briefing of drivers.

NOTIFICATION OF HEARING-IMPAIRED

Extent-of-Play Agreement:

- The hearing-impaired list will be available for inspection at each respective EOC. The list will be reviewed but not retained by the Federal evaluator. The procedures for notification will also be discussed at the EOC.

- There will be no actual notification of hearing-impaired individuals during the exercise.

EVACUATION OF NON-INSTITUTIONALIZED MOBILITY-IMPAIRED INDIVIDUALS

Extent-of-Play Agreement:

- The list of non-institutionalized mobility-impaired individuals will be available for inspection at each respective EOC. The lists will be reviewed but not retained by the Federal evaluator.

- There will be no actual dispatch of vehicles for transport of non-institutionalized mobility-impaired individuals.

- During the exercise, there will be no actual contact of non-institutionalized mobility-impaired individuals identified on the list.

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.c – Implementation of Protective Actions for Special Populations

Criterion 3.c.2: OROs/School officials decide upon and implement protective actions for schools. (NUREG-0654, J.10.c, d, g)

EVACUATION OF SCHOOL POPULATIONS

Extent-of-Play Agreement:

- Bus companies will be interviewed prior to the September 24, 2002, exercise as per the Offsite Extent-of-Play Activities Schedule. Additional bus company interviews will be conducted after the exercise as agreed to by FEMA, NYSEMO, and each County EMO.

- Each company will provide a dispatcher and at least five to 10 percent of that company's drivers for interview.

- A State Controller will provide the bus routes to be discussed to the bus dispatcher for the briefing of drivers.

SCHOOL INTERVIEWS

Extent-of-Play Agreement:

- The minimum number of schools (one school per district) to be interviewed prior to the September 24, 2002, exercise is as follows:

  - Westchester County – 9 schools
  - Rockland County – 5 schools
  - Orange County – 1 school
  - Putnam County – 3 schools

  Additional school interviews will be conducted after the exercise as agreed to by FEMA, NYSEMO, and each County EMO.

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.d – Implementation of Traffic and Access Control

Criterion 3.d.1: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654, J.10.g, j)

TRAFFIC AND ACCESS CONTROL POINTS (TCPs and ACPs)

Extent-of-Play Agreement:

- During the September 24, 2002, exercise, law enforcement officials will discuss how to activate TCPs/ACPs in the field in mutually agreed upon locations. There will be two interviews of law enforcement officials per EPZ County.

- Each designated law enforcement agency will provide one officer. The State Controller will select a TCP/ACP assigned to that agency and provide this information via a free play message to the dispatcher for the briefing of the TCP/ACP officer.

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.d – Implementation of Traffic and Access Control

Criterion 3.d.2: Impediments to evacuation are identified and resolved. (NUREG-0654, J.10.k)

IMPEDIMENTS TO EVACUATION

Extent-of-Play Agreement:

- Each of the four 10-mile plume exposure pathway EPZ counties is to demonstrate the organizational ability to deal with at least two impediments to evacuation.
- State Controllers in the County EOCs will hand the free play messages to the County Emergency Management Director or his designee for action to test the procedures for the removal of traffic impediments.
- No equipment (Barriers, Traffic cones, Signs, etc.) will be deployed to the field.
- This demonstration will not involve the dispatch of a police or other emergency vehicle to the scene of a simulated impediment. Initial contact of resource providers will be actual and some follow-up contacts may be simulated. All calls will be logged at each EOC.

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.e – Implementation of Ingestion Pathway Decisions

Criterion 3.e.1: The ORO demonstrates the availability and appropriate use of adequate information regarding water, food supplies, milk and agricultural production within the ingestion exposure pathway emergency planning zone for implementation of protective actions. (NUREG-0654, J.9, 11)

Not to be demonstrated during this exercise.

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.e – Implementation of Ingestion Pathway Decisions

Criterion 3.e.2: Appropriate measures, strategies and pre-printed instructional material are developed for implementing protective action decisions for contaminated water, food products, milk and agricultural production. (NUREG-0654, J.9, 11)

Not to be demonstrated during this exercise.

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.f – Implementation of Relocation, Re-entry, and Return Decisions

Criterion 3.f.1: Decisions regarding controlled re-entry of emergency workers and relocation and return of the public are coordinated with appropriate organizations and implemented. (NUREG-0654, M.1, 3.)

Not to be demonstrated during this exercise.

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

Sub-element 4.a – Plume Phase Field Measurement and Analyses

Criterion 4.a.1: The field teams are equipped to perform field measurements of direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates. (NUREG-0654, H.10; I.7, 8, 9)

FIELD MONITORING TEAMS

Extent-of-Play Agreement:

- The monitoring teams will not be suited up in anti-contamination clothing. However, the clothing will be available for inspection.

- Field team equipment is calibrated by IP2's RP Department. An internal IP2 requirement provides for calibration of this equipment every six months. Therefore, the calibration sticker for this equipment shows a "calibration due date" which reflects the six month calibration schedule. The instruments are considered calibrated as long as the current date is within one year of the calibration date.

- The instruments that are used for field monitoring are the RO-2A (Gamma and Beta-mR/hr or R/hr) or equivalent and RM-14 (Gamma and Beta – CPM) or equivalent.

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

Sub-element 4.a – Plume Phase Field Measurement and Analyses

Criterion 4.a.2: Field teams are managed to obtain sufficient information to help characterize the release and to control radiation exposure. (NUREG-0654, H.12; I.8, 11; J.10.a)

Extent-of-Play Agreement:

- Plume centerline data will be provided by the licensee field teams.

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

Sub-element 4.a – Plume Phase Field Measurement and Analyses

Criterion 4.a.3: Ambient radiation measurements are made and recorded at appropriate locations, and radioiodine and particulate samples are collected. Teams will move to an appropriate low background location to determine whether any significant (as specified in the plan and/or procedures) amount of radioactivity has been collected on the sampling media. (NUREG-0654, I.9)

FIELD MONITORING TEAMS

Extent-of-Play Agreement:

- Each EPZ County will dispatch two radiological monitoring teams. Each team will be supplied with a State Controller and FEMA evaluator.
- The monitoring teams will not be suited up in anti-contamination clothing. However, the clothing will be available for inspection.
- Each team will take at least two ambient radiation measurements and at least two air samples. All teams must take the air samples as though they were in the presence of the plume (even County teams that may not be impacted by the plume).
- The use of silver zeolite cartridges will be simulated and charcoal cartridges will be used. However, the silver zeolite cartridges will be available at dispatch point of kit.
- There will be no actual packaging or transport of samples to the laboratory. EOC staff will be questioned only regarding means of transportation of air samples to a central point and the location of the laboratory. Field teams will demonstrate how to obtain air samples during the exercise and will be questioned only regarding the procedures for the pick-up point of air samples.

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

Sub-element 4.b – Post Plume Phase Field Measurements and Sampling

Criterion 4.b.1: The field teams demonstrate the capability to make appropriate measurements and to collect appropriate samples (e.g., food crops, milk, water, vegetation, and soil) to support adequate assessments and protective action decision-making. (NUREG-0654, I.8; J.11)

Not to be demonstrated at this exercise.

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

Sub-element 4.c - Laboratory Operations

Criterion 4.c.1: The laboratory is capable of performing required radiological analyses to support protective action decisions. (NUREG-0654, C.3; J.11)

Not to be demonstrated during this exercise.

EVALUATION AREA 5: EMERGENCY NOTIFICATION AND PUBLIC INFORMATION

Sub-element 5.a – Activation of the Prompt Alert and Notification System

Criterion 5.a.1: Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The initial instructional message to the public must include as a minimum the elements required by current FEMA REP guidance. (10 CFR Part 50, Appendix E.IV.D; NUREG-0654, E.5, 6, 7)

Extent-of-Play Agreement:

- There will be no actual siren sounding and no broadcasting of Emergency Alert System (EAS) messages. The Indian Point siren system was last tested on March 6, 2002.
- Airing of the initial EAS message will be simulated.
- Contact with the radio station for subsequent EAS messages will be simulated.
- Regular programming responsibilities of the radio station may preclude participation at the time of the issuance of the simulated EAS message.

EVALUATION AREA 5: EMERGENCY NOTIFICATION AND PUBLIC INFORMATION

Sub-element 5.a – Activation of the Prompt Alert and Notification System

Criterion 5.a.2: RESERVED

EVALUATION AREA 5: EMERGENCY NOTIFICATION AND PUBLIC INFORMATION

Sub-element 5.a – Activation of the Prompt Alert and Notification System

Criterion 5.a.3: Activities associated with FEMA approved exception areas (where applicable) are completed within 45 minutes following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. Backup alert and notification of the public is completed within 45 minutes following the detection by the ORO of a failure of the primary alert and notification system. (NUREG-0654, E. 6; Appendix 3.B.2.c)

Extent-of-Play Agreement:

- There are no exception areas that require supplementary route alerting.

EVALUATION AREA 5: EMERGENCY NOTIFICATION AND PUBLIC INFORMATION

Sub-element 5.b – Emergency Information and Instructions for the Public and the Media

Criterion 5.b.1: OROs provide accurate emergency information and instructions to the public and the news media in a timely manner. (NUREG-0654, E. 5, 7; G.3.a, G.4.c).

PUBLIC INSTRUCTION AND EMERGENCY INFORMATION

Extent-of-Play Agreement:

- "EAS Follow-on News Releases" are provided to WABC Radio only and the media at the JNC.

EMERGENCY INFORMATION

Extent-of-Play Agreement:

- Orange County will utilize a videoconference link from the County EOC to the JNC.

PUBLIC INQUIRY

Extent-of-Play Agreement:

- The public inquiry function will be staffed by at least six operators with one supervisor.
- Inject messages will indicate false or misleading information to enable the public inquiry function to identify trends and false rumors.

EVALUATION AREA 6: SUPPORT OPERATION/FACILITIES

Sub-element 6.a – Monitoring and Decontamination of Evacuees and Emergency Workers and Registration of Evacuees

Criterion 6.a.1: The reception center/emergency worker facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees and/or emergency workers. (NUREG-0654, J.10.h; J.12; K.5.a)

Extent-of-Play Agreement:

- Reception centers will be demonstrated prior to the September 24, 2002, exercise as per the Offsite Extent of Play Activities Schedule. Additional reception centers will be evaluated (baseline evaluations) after the exercise as agreed to by FEMA, NYSEMO, and each County EMO.

- At least 1/3 of the required monitors will be present and at least six simulated evacuees will be monitored.

- Initial personnel monitoring staff will be demonstrated as tabulated below. Staff will be provided to simulate evacuees.

Number of Persons for Initial Personnel Monitoring				
Category	**Orange County**	**Rockland County**	**Westchester County**	**Putnam County**
Radiological monitors for initial monitoring	**2** *(See Note 1)*	**3** *(See Note 4)*	**3** *(See Note 4)*	**2** *(See Note 1)*
Recorders	**1** *(See Note 2)*	*(See Note 2)*	**2**	*(See Note 3)*
No. of Portal Monitors	**1**	**2**	**2**	**1**

Note 1: One monitor for portal monitoring; one monitor for hand-held monitoring.

Note 2: Evacuees will be monitored, then either given a "clean" card or directed to decontamination area.

Note 3: Evacuees will be monitored, then either hand-stamped clean or directed to decontamination area.

Note 4: Two monitors for portal monitoring, one monitoring for hand-held monitoring.

- At a minimum, the additional monitoring personnel will include:

  - 4 monitors for decontamination (2 male and 2 female)
  - 1 monitor for vehicle monitoring
  - 1 monitor for vehicle decontamination

- With regard to registrars (social services), the following staffing will be present at a minimum:

  - 1 individual, Orange County
  - 2 individuals, Rockland County
  - 1 individual, Putnam County
  - 2 individuals, Westchester County

- Each vehicle monitor will process at least two vehicles.

- There will be only a representative (small) sample of supplies available at each facility.

- Decontamination techniques will be simulated. At the Personnel Monitoring Center (PMC), activities that may damage property (such as parking vehicle on grass) are to be simulated.

- The monitoring and decontamination teams will not be suited up in anti-contamination clothing. The Federal evaluator may request one monitor to suit-up in anti-contamination clothing for demonstration purposes.

- Reception center floors will be covered with a representative sample of paper/plastic during this demonstration. However, all required materials will be available for inspection.

- Both male and female decon technique will be demonstrated, though only one decon area will be set up.

- Portal monitors will be operated in accordance with manufacturer specifications. Portal monitors are checked with a check source to verify operability.

EVALUATION AREA 6: SUPPORT OPERATION/FACILITIES

Sub-element 6.b – Monitoring and Decontamination of Emergency Worker Equipment

Criterion 6.b.1: The facility/ORO has adequate procedures and resources for the accomplishment of monitoring and decontamination of emergency worker equipment including vehicles. (NUREG-0654, K.5.b).

Extent-of-Play Agreement:

- Emergency Worker Personnel Monitoring Centers (EWPMC) will be demonstrated prior to the September 24, 2002, exercise as per the Offsite Extent-of-Play Activities agreement Schedule.
- Each facility will demonstrate the following:
  - 1 monitor for personnel monitoring
  - 2 monitors for personnel decontamination (1 male and 1 female)
  - 1 monitor for vehicle monitoring
  - 1 monitor for vehicle decontamination
- The monitoring and decontamination teams will not to be suited up in anti-contamination clothing. However, the Federal evaluator may request one monitor only to suit-up in anti-contamination clothing for demonstration purposes.
- Decontamination actions are to be simulated. At the PMC, activities that may damage property (such as parking vehicles on grass) are to be simulated.
- EWPMC floors will be covered with a representative sample of paper/plastic during this demonstration. However, all required materials will be available for inspection.
- One portal monitor for personnel monitoring will be demonstrated by Rockland County and Orange County.
- Both male and female decon technique will be demonstrated, though only one decon area will be set up.
- The portal monitor will be operated in accordance with manufacturer specifications. Portal monitors are checked with a check source to verify operability.

EVALUATION AREA 6: SUPPORT OPERATION/FACILITIES

Sub-element 6.c - Temporary Care of Evacuees

Criterion 6.c.1: Managers of congregate care facilities demonstrate that the centers have resources to provide services and accommodations consistent with American Red Cross planning guidelines. (Found in MASS CARE-Preparedness Operations, ARC 3031.) Managers demonstrate the procedures to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate prior to entering congregate care facilities. (NUREG-0654, J.10.h, J.12)

Extent-of-Play Agreement:

- Congregate care centers will be demonstrated prior to the September 24, 2002, exercise as per the Offsite Extent-of-Play Activities Schedule. Additional congregate care centers will be evaluated (baseline evaluations) after the exercise as agreed to by FEMA, NYSEMO, and each County EMO.
- Capabilities will be demonstrated through an interview process. Personnel, at a minimum, will consist of one Manager and Assistant for each congregate care center opened.
- Availability of additional personnel will be determined by interview discussion.
- One individual may perform two functions (e.g. Shelter Manager could also serve as communicator).
- Supplies required for long-term mass care (cots, blankets, food, etc.) are not to be acquired or brought to the congregate care centers.

EVALUATION AREA 6: SUPPORT OPERATION/FACILITIES

Sub-element 6.d - Transportation and Treatment of Contaminated Injured Individuals

Criterion 6.d.1: The facility/ORO has the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals. (NUREG-0654, F.2; H.10; K.5.a, b; L.1, 4)

Extent-of-Play Agreement:

- The use of flashing lights and sirens for exercise play is not required.

APPENDIX 4

2002 EXERCISE SCENARIO
INDIAN POINT ENERGY CENTER, UNIT 2

Initial Condition

The Indian Point Energy Center Unit 2 has been operating at full power for 120 Effective Full Power Days. The #23 Charging Pump is out of service for a scheduled 5-year overhaul. The 13.8 KV feed to Unit 2 has been out of service for 24 hours for bushing replacement on the auto transformer. A 72 hour Limiting Condition of Operation (LCO) is in effect per Technical Specifications 3.7.B.2. The following breakers are open and racked out for the transformer work: 52GT25; 52GT26; 52GT2; 52GT/BT.

Narrative Summary

A fault occurs on Bus 3A. Emergency Diesel Generator #23 trips on over crank. An investigation will determine that there is a blockage in the fuel line at the duplex fuel filter. Emergency Diesel Generator #23 will not be returned to service before 12:45.

Reactor Coolant Pump #23 trips, causing Turbine/Reactor Trip. A loss of 138 KV power occurs when the Generator Output breakers open. Emergency Diesel Generator #22 breaker to 480V Bus 2A fails to close. Investigation will determine that the cell switch is bad. Repair is not expected until 12:45. An **ALERT** will be declared based on **EAL 6.1.3.**

Weld Channel Zone 2 will develop a high flow condition.

Containment Radiation Monitors R-25 and R-26 will increase to greater than 68 R/hr. A **General Emergency** will be declared based on **EAL 2.2.3.** Initial protective action recommendations will be developed and transmitted to the offsite authorities.

Weld Channel Zone 2 will lose pressurization and a radiological release through the plant vent will be identified. Based on the release, the protective action recommendations will be upgraded and transmitted to the offsite authorities. Investigation will determine that pressure regulator PCV-1195 has failed closed. Zone 2 will be repressurized.

The Exercise scenario will end when the radiological release is terminated and cold leg recirculation has been established.

The Exercise will end when all objectives have been given ample opportunity for demonstration by BOTH onsite and offsite responders.

Exercise Protective Action Recommendations

Initial Protective Action Recommendations will be based on Plant Conditions in accordance with Procedure IP-EP-410, Protective Action Recommendations and will occur at the declaration of a General Emergency at approximately 12:30 p.m. Those protective action recommendations will include the following ERPAs due to the wind direction of 205 degrees @ about 12 mph and Pasquill Category C.

1, 2, 3, 4, 7, 8, 9, 16, 18, 29, 30, 38, 39, 43, and 44

Upgraded Protective Action Recommendations will be based on the initiation of a radiological release and in accordance with Procedure IP-EP-410, Protective Action Recommendations. It will occur at approximately 13:50. Those protective action recommendations will include the following ERPAs due to the wind direction of 205 degreed @ about 12 mph and Pasquill Category C.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 16, 17, 18, 19, 19, 20, 23, 24, 26, 29, 30, 31, 38, 39, 40, 43, 44, 45, 46, 47, 48, and 49

(The underlined ERPAs are the additional ERPAs recommended to evacuate due to the radiological release.)

2002 NRC/FEMA Exercise Scenario Timeline

Initial Conditions

Indian Point is at 100% Power for 120 Effective Full Power Days
#23 Charging Pump is out of service for pump schedule 5-year overhaul.
13.8 KV feed to Unit 2 has been out of service for 24 hours for bushing replacement on the auto transformer. A 72 Hr LCO is in effect per TS 3.7.B.2. The following 13.8 KV breakers are open and racked out for the transformer work:
52GT25, 52GT26, 52GT2, 52GT/BT

Meteorological Conditions

Wind direction is from 205 degrees at about 12 mph. The temperature is 70 F with clear skies.

Forecast – The long-term meteorological forecast will indicate that the wind direction will to the WNW that evening.

Scenario Timeline

08:00 Provide initial conditions to Control Room (Simulator Personnel)

08:20 A fault occurs on 480V Bus 3A. Emergency Diesel Generator #23 trips on over crank. Investigation will determine that there is a blockage in the fuel line at the duplex fuel filter. EDG #23 will not be returned to service before 12:45.

08:30 Reactor Coolant Pump #23 trips causing Turbine/Reactor Trip. A loss of 138 KV power occurs when the Generator Output breakers open. EDG #22 breaker to 480V Bus 2A fails to close. Investigation will determine that the cell switch is bad. Repair is not expected until 12:45. **An ALERT will be declared based on EAL 6.1.3 (~08:45).**

10:45 A Large Break LOCA occurs. Due to electrical failures, only #21 SI Pump will run. RVLIS level will decrease <41% and an Orange Path for Core Cooling will be identified. **A SITE AREA EMERGENCY will be declared based on EAL 1.2.1 (~11:00).**

11:15 Weld Channel Zone 2 will develop a high flow condition.

12:15 Containment radiation monitors R-25 and R-26 will increase > 68 R/hr. **A GENERAL EMERGENCY will be declared based on EAL 2.2.3 (~12:30). Protective Action Recommendations are provided.**

13:50 Weld Channel Zone 2 will lose pressurization and a release through the plant vent will be identified. **Protective Action Recommendations will be upgraded and provided.**

Investigation will determine that pressure regulator PCV-1195 has failed closed. Zone 2 will be repressurized at 15:15 terminating the release.

15:15 The scenario will end when the release is terminated and cold leg recirculation has been established.

~15:30 The Exercise will end when all objectives have been given ample opportunity for demonstration by BOTH onsite and offsite responders.

INDIAN POINT ENERGY CENTER UNIT 2

2002 EXERCISE SCENARIO

TIMELINE

~08:00 A.M.	Initial Conditions at the Plant
~08:45 A.M.	Alert
~11:00 A.M.	Site Area Emergency
~12:30 P.M.	General Emergency – Initial PARs issues
~1:50 P.M.	Radiological Release Begins – Updated PARs issued
~3:15 P.M.	Radiological Release Terminated
~3:30 P.M.	End of Exercise

INDIAN POINT ENERGY CENTER UNIT 2

2002 EXERCISE SCENARIO

METEOROLOGICAL CONDITIONS

Wind direction will be toward the NNE (Westchester and Putnam Counties) at about 12 mph. The winds will remain in that direction for the remainder of the exercise. The long-term meteorological forecast will indicate that the wind direction is expected to shift to the WNW that evening.

Time	Wind Direction	Wind Speed	Pasquill Category
0800	205	12 mph	C
0900	205	12 mph	C
1000	205	12 mph	C
1100	205	12 mph	C
1200	205	12 mph	C
1300	205	12 mph	C
1400	205	12 mph	C
1500	205	12 mph	C
1600	205	12 mph	C
1700	205	12 mph	C
1800	150	10 mph	C
1900	150	10 mph	C

APPENDIX 5

PRIOR ISSUES NOT SCHEDULED TO BE DEMONSTRATED

This appendix contains the description and status of ARCAs that were assessed during prior exercises at Indian Point 2 Nuclear Power Station. They were assessed either at jurisdiction or functional entities exempt from demonstration at this exercise or for ingestion exposure pathway objectives not scheduled for demonstration during this exercise.

PRIOR ISSUES AT JURISDICTION OR FUNCTIONAL ENTITIES NOT SCHEDULED TO BE DEMONSTRATED

New York State Emergency Operations Center

Issue No.: 32-99-29-A-01

Description: Implementation issues associated with relocation and re-entry were not adequately communicated to the staff or public, and not fully coordinated with other organizations, such as the counties.

Key decisions and instructions were not communicated to the staff or the public for proper implementation. For example, although the public was instructed to relocate from hotspots A and B, the evacuees were not provided with the length of time the relocation was estimated to last (over one year), or of the preparedness actions to take for such an extended evacuation.

Also, implementation of protective actions was not fully coordinated with other organizations, such as the affected counties. For instance, implementation of the re-entry policy, which varied among the counties involved, was not fully discussed and coordinated.

ATTACHMENT B

FEMA Reviews of the State and County Radiological Emergency Response Plans for the Indian Point Energy Center and Comments on the REP Program, Planning and Exercise Issues Raised by Others

February 21, 2003

Executive Summary

The Federal Emergency Management Agency (FEMA), Region II, assisted by the Regional Assistance Committee (RAC) has completed a review of the most recent State and county Radiological Emergency Preparedness Plans (REPPs) for the Indian Point Energy Center. FEMA has also reviewed comments made in the report to the Governor's Office of the State of New York, "Review of Emergency Preparedness at Indian Point and Millstone," Draft, dated January 10, 2002, prepared by James Lee Witt Associates, LLC (herein referred to as the Draft NY State Report.).

It is noted that the Draft NY State Report's review of the State and four county radiological emergency response plans makes some of the same findings of our own review submitted to the State of New York on January 15, 2002, although FEMA's review is more comprehensive. Having had an independent reviewer identify similar findings validates our review. The State of New York and the counties of Putnam, Orange, Rockland, and Westchester have been working to address FEMA's previously identified plan issues. Our recent review of the plans indicates that many of the issues raised in the original FEMA/RAC Plan Review have now been addressed by the counties and the State has committed to addressing concerns with the State plans.

However, the Draft NY State Report contains several discrepancies regarding Indian Point and the Radiological Emergency Preparedness (REP) program. This review is organized into 5 parts. First are the updated FEMA reviews of the State and County REPPs. Parts 2, 3, 4 and 5 contain FEMA and the RAC's comments on the NY State Report. Part 6 has comments on the 44 CFR 350.13 Petition for Withdrawal of FEMA Approval of the Indian Point Radiological Emergency Preparedness Plan of June 17, 2002.

Report Contents

1. FEMA/RAC Reviews of the State and County Radiological Emergency Preparedness Plans for the Indian Point Energy Center including comments from the Draft NY State Report

FEMA's reviews of the State and county radiological emergency preparedness plans follow. The reviews were originally prepared as an in-depth review of the plans submitted in 2000. The plans, or plan changes, that were submitted in 2002 have been reviewed and the plan review updated accordingly. The focus during the re-review has been on those areas that were previously identified as incomplete or inadequate. Many of those areas have been addressed; some have not. In particular, the plan for Westchester will need to be re-evaluated once an updated cross-reference to guidance is provided; the changes to the format of the 2002 plan made it nearly impossible to review against FEMA's review of the 2000 plan.

In addition, the findings of the Draft NY State report on the plans have been incorporated into the reviews. In many cases the Draft NY State report's findings validated our own. In others, the FEMA review shows that the more comprehensive review of the plans done by FEMA revealed information that the State's reviewers did not locate in the plans.

(Please insert plan reviews (5 files) here.)

2. General FEMA/RAC Comments on the Draft NY State Report

The Draft NY State Report[1] raises a number of issues that are worth considering for plan enhancements, such as: better education of the public, especially transients, more training of offsite responders, better emergency communications and more planning involvement with cities and larger employers, etc. Included as an attachment are a listing of sound findings and recommendations from the NY State Report that FEMA agrees with and will pursue where appropriate. The issues identified are generic issues that continue to challenge emergency planners everywhere and are not unique to Indian Point. When updated and exercised appropriately plans and efforts in place across the nation are adequate to meet the intent of the planning guidance, however, additional efforts can and should be made, particularly, in making better use of available technology and experience in this area. The benefits of involving larger numbers of stakeholders in adding constructively to the overall process are significant. Consideration of family protection plans could bolster the confidence of the public that designated responders would be available if their families' protection was better assured.

This said, the following comments were prepared by FEMA and the Regional Assistance Committee and are provided in response to the stated facts, perceptions and conclusions in a number of areas in the draft report.

- *The Draft NY State report concluded that "the current radiological response system and capabilities are not adequate to overcome their combined weight and protect people from an unacceptable dose of radiation in the event of a release from Indian Point, especially if the release is faster or larger than the design basis release."*

The emergency plans developed by the utility, state and counties around Indian Point are adequate to protect the public health and safety if updated and exercised consistent with current guidelines. FEMA, with the assistance of the Regional Assistance Committee (RAC), a panel of experts in various aspects of emergency preparedness from a number of Federal agencies, periodically reviews the state and county plans and has evaluated numerous exercises over the years. These reviews and exercise evaluations consistently indicated that the emergency response plans for Indian Point area provided a sound framework for effective decision-making and implementation of essential emergency preparedness functions, regardless of the initiating event. While there are currently absent documents identified by the FEMA Plan Reviews (see Section 1 of this report), in general the IP plans and procedures have been found to be adequate.

NRC regulations require that comprehensive emergency plans be prepared and periodically exercised to assure that actions can and will be taken to protect

[1] "Review of Emergency Preparedness at Indian Point and Millstone – Draft," James Lee Witt Associates, LLC, January 10, 2003.

citizens in the vicinity of a nuclear power plant. Emergency response plans are periodically updated and are designed to be flexible enough to respond to a wide variety of adverse conditions, including a terrorist attack. The planning process has demonstrated its robustness and ability to evolve and improve during the years since the Three Mile Island accident. The coordinated response to contain or mitigate a threatened or actual release of radioactive material would be essentially the same whether it resulted from an accidental or terrorist act. Further, it should be stated that every biennial exercise has used releases or potential releases that require an evacuation of at least a portion of the planning zone.

- *The Executive Summary of the Draft NY State Report identifies the need to consider terrorism annexes or components to the plans.*

  The Draft NY State Report does not account for the significant security measures that have been put in place since the terrorist attacks of September 11, 2001. Immediately after the attacks, the NRC advised plant operators to implement the highest level of security. Additionally, the NRC staff undertook a comprehensive evaluation of NRC's security and safeguards program. On February 25, 2002, the NRC issued orders to all operating commercial nuclear power plants to implement interim compensatory security measures for the current threat environment, which included security enhancements which have emerged from the NRC's ongoing comprehensive security review. These requirements include increased patrols, augmented security forces and capabilities, additional security posts, installation of additional physical barriers, vehicle checks at greater standoff distances, enhanced coordination with law enforcement and military authorities, and more restrictive site access controls for all personnel. The order also directed licensees to evaluate and address potential vulnerabilities of spent fuel pools and the reactor plant itself, and to develop specific guidance and strategies, such as to respond to an event that damages large areas of the plant due to explosions or fire. Additionally, the order directed licensees to take specific actions as appropriate to ensure continued improvements to existing emergency response plans. Entergy and Dominion are both in full compliance with the order and enhanced security measures are in place at Indian Point and Millstone.

  In addition, the NRC has been working closely with numerous Federal agencies, including the Department of Defense, Department of Homeland Security, Department of Energy, Federal Emergency Management Agency, Federal Bureau of Investigation, and Federal Aviation Administration to develop interagency response procedures and enhancements. The NRC is also working with State governments to enhance security of nuclear facilities and activities.

- *The Draft NY State Report compared the licensee's as well as the county and State emergency preparedness plans against the stated criteria in NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological*

Emergency Response Plans and Preparedness in Support of Nuclear Power Plants."

As noted above in the Section 1, Plan Reviews, efforts should have been made by the authors of the NY State Report to verify their concerns with the plans before characterizing each as 'not meeting' requirements. The authors of the NY State Report did not include a review of the procedures that are an integral part of the plan and where many of the details of what is to be done are included. By this approach, the report does the public a disservice when referring to requirements not being met in "Appendix C: Individual Plan Review Compliance Matrices." Additionally, strict interpretation of this NUREG does not consider the numerous improvements and enhancements made to the emergency planning process, and incorporated in Supplements to NUREG-0654/FEMA-REP-1, FEMA Guidance Memoranda and other documents, since the publication of NUREG-0654/FEMA/REP-1 in 1980. The purpose of NUREG-0654/FEMA-REP-1 is to provide a basis for NRC licensees, State and local governments to develop radiological emergency plans and improve emergency preparedness.

- *Sheltering as part of the protective action strategy is discussed in many areas of the NY State Report. The lack of active consideration of sheltering as part of the emergency preparedness planning process is identified as a concern.*

The State and county plans utilize sheltering, both for selected populations and for general populations as part of the protective action strategy under various emergency conditions. The conditions for use are described in the plans. Research and experience has led to a change in the strategy for use of sheltering as described below.

NUREG-0654, Appendix 1 provides guidance on the application of evacuation and sheltering as protective measures for a radiological event. Information Notice 83-28 was issued on May 4, 1983 to provide additional clarification of the guidance. Following the EPA updated guidance on protective action guidelines and protective actions for nuclear incidents, and more than ten years of drill and exercise experience the guidance was further enhanced and clarified. In 1996, the NRC published Supplement 3 to NUREG-0654.FEMA-REP-1, "Criteria for Protective Action Recommendations for Severe Accidents" Draft Report for Interim Use and Comment. This report states "Since the publication of the original guidance in NUREG-0654, extensive studies of severe reactor accidents have been performed. These studies clearly indicate that for all but a very limited set of conditions, prompt evacuation of the area near the plant is much more effective in reducing the risk of early health effects than sheltering the population in the event of severe accidents. In addition, studies have shown that except for very limited conditions, evacuation in a plume is still more effective in reducing health risks than prolonged sheltering near the plant. Therefore, the NRC and FEMA recommend that the population near the plant should be evacuated if possible for actual or projected severe core damage accidents." It should be noted

that the above guidance applies to the populations most immediately at risk, nominally those within 2 miles of the plant and about 5 miles downwind from the plant. Persons in the remainder of the plume exposure pathway emergency planning zone are directed to go indoors and listen to the Emergency Alert Stations for additional directions (i.e., Shelter). The principal protective actions of evacuation and sheltering, used during the early phase are applied when and where each can provide the optimum benefit for the circumstances. The guidance clearly indicates that sheltering in close proximity to the plant should be used when (environmental) conditions make evacuation more dangerous. Additionally, for releases that are short-term (puff), of predictable duration, sheltering may be the appropriate recommendation. In those areas not immediately affected by the (potential) release, use of sheltering ensures members of the public have access to updated event information.

- *Throughout the Draft NY State Report concerns are expressed with the protective action decision and implementation process. For example, in Chapter 4 page 60 of the report, states "Calculations of the optimal strategies for protecting the public safety and health are best done during the planning phase and incorporated into the emergency plans. There are no such comprehensive analyses incorporated as a part of the plans for the Indian Point facility, counties, or the State of New York."*

  Comprehensive analyses have been performed and the results have been incorporated into the onsite and offsite emergency plans. There is extensive federal and industry guidance that assists licensees in developing the bases for event classifications and protective action recommendations. NUREG-0654/FEMA-REP-1, dated October 1980, identifies multiple criteria that correspond to event severity levels, such as Unusual Event (UE), Alert, Site Area Emergency (SAE), and General Emergency (GE). These severity levels form the bases for the actions, if any, to be taken in the event of an accident at a nuclear power plant. These are referred to as emergency action levels (EALs) which specify abnormal plant conditions and classify them according to the related severity level. These EALs encompass a spectrum of events, from security threats to a large break loss of coolant accident, and direct the operators to appropriate severity classification. The severity level classification of the event dictates the onsite actions, including the notification of responders and offsite authorities, recommending onsite and offsite protective actions, etc. Licensee personnel are evaluated during drills and exercises on their ability to correctly classify an event and to make the appropriate and timely protective action recommendations to the offsite authorities. The offsite organizations are well aware of the utility's classification system, use a common handbook on the EAL/classification system, and have plans geared to take specific actions based on this scheme.

  In addition, the report suggests that different emergency plans should be developed for plants in large population areas. When emergency plans are developed, and as they are reviewed and revised, consideration is given to the

unique features of each site, such as population density, river valleys, coastlines, mountains, etc. This process considers any unique features and assures that they are appropriately accommodated.

- *In the discussion on page 26, Section 3.5, of the Draft NY State Report, "Offsite Accident Impact Analysis Review," the authors state that "Once accident impact analysis (or dose assessment) has been done, emergency managers can recommend public protective evacuation or sheltering in an attempt to reduce the doses received by the public and the consequences of the release. The decisions made in the early phase (usually considered to be the first four days) are largely dependent on observations made by plant personnel (e.g., "there's a breach to the containment vessel") and computer modeling using current meteorological data and estimates of the source and quantity of radioactive material to project where a plume might be headed."*

  By basing the recommendations to the offsite authorities on plant conditions, rather than waiting for a release or dose projections, potentially impacted public can be evacuated before a release takes place, or earlier than could occur if dose projections were used. The nuclear power plant licensee must make the notification of a GE in addition to recommended protective actions within 15 minutes of the declaration of a general emergency, whether the GE occurs as the result of slowly degrading plant conditions or a sudden, catastrophic plant event. The protective action recommendation process has been identified by the NRC as an important part of emergency response. Utility personnel are evaluated on their ability to correctly classify an event and to make appropriate protective action recommendations in a timely manner (about 15 minutes). These initial protective action recommendations are based upon degrading plant conditions rather than waiting for dose assessment results or field monitoring information.

- *The Draft NY State Report describes general problems with the dose assessment and plume modeling process. These include, but are not limited to, inability to include wind shifts in plume modeling, terrain effects, lack of standardization of dose assessment models, and dose attainment time.*

  The NRC regulations require that licensees have "Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use."[2] Variations, such as wind direction, plume meander, terrain effects, will occur and most models are unable to project the exact location of the plume meander. The NRC recommendation from NUREG-0654/FEMA-REP-1, Supplement 3, accounts for such variability by recommending a "keyhole" strategy for protective actions. The keyhole strategy is evacuation of the 2-mile ring around the plant site and 5 miles downwind in the affected and the two adjacent sectors. Such a strategy is

[2] 10 CFR 50.47(b)(9)

conservative, and results in the early evacuation of the population most at risk from a potential release from the plant. The keyhole encompasses any plume meander caused by micro-meteorological effects as well as terrain effects that the plume model may not directly include.

- *An ongoing concern in the communities surrounding Indian Point and Millstone, and identified in the Draft NY State Report is the time to evacuate and the ability of the population to evacuate in the unlikely event of an accident at either reactor (site). Evacuation concerns include limited roadways, high population density, adverse weather impacts, shadow evacuation and out dated evacuation time estimates (ETEs). Additionally, on page 87, the report states "For a successful evacuation to occur, the population must clear the affected area before receiving a critical dose of radiation as specified in federal guidelines."*

  NRC regulations require that the operator of a nuclear power reactor provide an analysis of the time required to evacuate and take other protective actions within the plume exposure pathway. This analysis is referred to as the evacuation time estimate (ETE). ETEs do not reflect the ability of the population to be evacuated prior to receiving a specified radiation dose. ETEs are primarily used to identify potential traffic bottlenecks so that appropriate traffic control plans can be developed. ETEs are also used by decision-makers in determining whether evacuation or sheltering might be appropriate in a given area based on knowledge and prognosis of release timing and duration. While there are no preset minimum evacuation times that a plant site must meet, the NRC expects that the ETE for a site is a reasonably accurate reflection of the time it would take to evacuate the site environs under normal and adverse conditions.

  Nuclear power reactor licensees are expected to review and revise their ETEs for their sites. This revision must take into account changes in population, road capabilities, potential traffic impediments, and other factors affecting the ETEs. On August 21, 2001, the NRC issued Regulatory Issues Summary (RIS) 2001-16 "Update of Evacuation Time Estimates," to all holders of operating licenses for nuclear power plants. In this RIS, the NRC alerted licensees of the possible need to update ETEs as a result of the 2000 Census.

  Only a fraction of the EPZ will be in the potential pathway of the plume at any point in time due to such factors as wind direction and wind speed. This is the population for which protective actions, such as evacuation, are needed. It is possible to move out of the plume by traveling only a short distance perpendicular to the downwind direction of the plume.

- *The Draft NY State Report indicates that the reviewed emergency plans are based on a compliance rather than a protective actions outcome.*

  The emergency planning regulations were based initially on considerations of necessary actions to identify accident conditions, assess them, notify the offsite

authorities of the need to take action, and to mitigate the accident. Subsequent to the TMI-2 accident, the regulations were rewritten to take advantage of the many lessons learned. Likewise the planning guidance was pulled into a single document (NUREG-0654/FEMA REP-1, Rev.1, 1980). This document provides the guidance for the utilities, states and local organizations for use in developing their plans. Many of the resulting planning criteria were developed directly from the lessons learned from the accident and the response to it. Therefore, to speak to mere compliance to the regulations and planning guidance does a disservice. The criteria were developed based on actual experience and the protective action outcomes. It is noted that several criteria in the NUREG have been superceded by subsequent changes in the regulations. The Indian Point area plans were revised to accommodate these changes.

SPECIFIC COMMENTS

Executive Summary:

- Executive Summary, page vi, Major Findings, item 5, states that "...exercises designed to test the plans are of limited use in identifying inadequacies..." Plans are developed to indicate what is to occur and what is to be accomplished during an emergency. By exercising the plans, inadequacies are identified, participants obtain a better understanding of their emergency response functions, and methods for improvement either in plan or implementation can be refined. What is essential is that the plan accurately reflects the actions that would be taken in the event of an emergency.

- Executive Summary, page vii, Regulations, second paragraph fails to mention that the new Evaluation Criterion have a final date of publication in the Federal Register on April 25, 2002. Only the modification to the Alert and Notification is still viable and it was published on September 12, 2001.

  Furthermore the paragraph states that the new evaluation process of focusing on performance was "not found in the planning and exercising practices of the State of New York and its jurisdictions." This is an inaccurate statement. The 2002 exercise for Indian Point was based on the new evaluation process and the participants were aware and did focus on performance. Several of the jurisdiction participants discussed how improved the whole process was and how they felt they were allowed to perform their duties.

- Executive Summary, page viii, Major Conclusions, first paragraph, ignores the fact that evacuations can/will occur before there is a release. Furthermore, a release in most cases will be of limited speed and it will take time for it to move from the reactor building to the site boundary to the 10-mile boundary of the EPZ.

- Executive Summary, page viii, Major Recommendations:
  a. First paragraph – "high population areas" is not defined.

b. Second paragraph: most people in crisis will comply with official directions; i.e. hurricane or tornado warnings. An individual cannot be forced.

c. Third paragraph: "the plans should discuss and evaluate strategies for protecting people in a variety of scenarios." This is not the purpose of the plan. The Evacuation Time Study does some of this. The concept of have a variety of scenarios and strategies is good; but does not belong in the response plan as it would intrude on its usefulness in an emergency.

d. Terrorism: statements regarding terrorism could be added to the plan. However, in reality, the off-site response would be the same regarding any release from the plant. The plans, both on site and off site are public documents and specific protection strategies are classified.

e. Communications: the State and four counties do have access to direct information. The inclusion of counties outside the 10-mile EPZ occurs in the Ingestion pathway zone.

f. Exercises: second paragraph: states that the exercise program uses a functional approach to exercise evaluation. This is not correct. Furthermore, the paragraph goes on to state "...reviews the performance of the system using the functions and the points of review." There are no points of review. As the authors of this document indicated there is a new exercise methodology and it was used during the 2002 exercise. Furthermore, to state that each "...atomized function and be reviewed separately..." is unclear.

g. A further comment on page x recommends that a performance outcome-based exercise program should be developed. The author appears unaware by this statement of FEMA's updated REP exercise process. The REP evaluation process is performance and outcome based. Response Management Technologies, p. x, first paragraph: The discussion has to do with onsite response; that is, saying what Indian Point is doing. It appears that the RECS messages are at issue and if so, the statement (third sentence) in the NY State Report is only partially correct. While a hard copy is transmitted by facsimile to the State and counties, the information is previously transmitted by a dedicated phone system that is not subject to overload during an emergency. The 4^{h} sentence is also not totally accurate. The MRP-DAS system, a computer link with the utility, gives almost real time (the data is a 15-min average of the instrument readings and is therefore delayed slightly) data of plant systems readings and includes the readings of the 16 radiation detectors that are placed around the site. The last sentence is also not totally accurate. In Westchester, for example, the assessment included populations impacted and projected arrival time of the plume. It should be noted that the initial PAR and PAD were well before any release and therefore at the time of the 1st decision there was no dose, only potential dose.

h. Response Management Technologies, p. x, second paragraph, states "Newer technologies, such as tone alert radios, have not been widely implemented." This statement is without substance and is inaccurate. Each of the four counties has tone-alert radios distributed throughout their respective emergency planning zones and this information is provided in each of the county plans. These radios are activated by the EAS signal

when an EAS message is broadcast. Tone Alert Radios have been an integral part of the ANS for many nuclear power plants for many years, including Hatch, Cooper, Woof Creek, Grand Gulf, Callaway, Indian Point, Duane Arnold, Fitzpatrick, Nine Mile, Farley, and Vogtle. The siren system around the Indian Point Energy Center is in the process of a major upgrade to include new siren components, a dedicated frequency for siren activation feedback, online monitoring capabilities, redundancy capability in every siren, and battery backup. Furthermore, in Chapter 5 of the Draft NY State Report, the authors acknowledge the use of tone alert radios and state that the approved Alert and Notification System is adequate; clearly an inconsistency within the report.

i. Response Management Technologies, p. x, third paragraph says that "Currently, the protective action decision-making process is very simplistic..." The initial utility recommendations are based on plant status almost exclusively. It is difficult to envision a case where the plant is running normally and there is a significant offsite problem. The NRC and FEMA have published the appropriate actions in Supplement 3 to NUREG-0654.

j. Response Management Technologies, p. x, fourth paragraph. Most current EOCs are functional and have periodic updates.

Chapter 1 - Introduction

- Chapter 1, page 7, 3rd paragraph, restates a given that hilly terrain may impact the effectiveness of sirens, cellular and radio communications systems. That is why there is an Alert and Notification System plan that must be approved by FEMA and is one component of the requirements to obtain a license from the NRC. Engineers knowledgeable in the effects of topography on sirens review the A&N. Later, in Chapter 5 the authors acknowledge that the Alert and Notification System is adequate.

Chapter 2 - Background

- Chapter 2, Figure 2-1 is missing the circle depicting the 10-mile radius. Figure 2-2: The distance legend and the 50-mile circle drawn are not of the same scale.

- Chapter 2, pages 15-16 are inconsistent with Executive Summary, page vi regarding the exercising of plans. According to pages 15-16, plans should simple, define emergency response roles, and be exercised. "Exercising the plan is critical to assessing its adequacy and effectiveness." In the Executive Summary states "Response exercises designed to test the plans are of limited use..." The authors are in conflict over this point.

- Chapter 2, Section 2.2, Description and Demographics of the Counties Surrounding Indian Point: It would be helpful to remind the reader that the percentages listed do not add up to 100% because the survey respondents fit into more than one category, such as those who are bilingual. Nevertheless, the data

show that there is a significant population that speaks English "less than very well," which verifies FEMA's own analysis of the results of the 2000 census on the subject of foreign language speakers within the 10-mile EPZ.

Chapter 3 – Description of the Hazard

- Chapter 3, 3.3 "Effects on Health," page 22 of the draft report identifies "Very high, short-term doses of radiation can cause early effects such as vomiting and diarrhea, skin burns, cataracts, and even death. Receiving such high doses can be compared to receiving a total of four lifetimes of normal background radiation in an extremely short time span, such as a few days or less." The report identifies the average radiation dose received yearly to be approximately 360 millirem. Acute exposure to four lifetimes of natural background radiation would be approximately 100 rem, well below the lowest entry in the table of effects located four pages later on page 26 in the draft report:

  The table of Whole Body Radiation Dose Effects:
  1,000 rem - death occurs within 30 days of exposure in 100 percent of the cases.
  450 rem - 50 percent die within 30 days of exposure, if untreated
  200 rem - 1 percent die within 30 days if untreated. Five percent suffer nausea.

- Chapter 3, page 21: The figure following Figure 3-2 needs to be labeled and titled.

- Chapter 3, section 3.4, page 24, states "The important thing to remember is that 1000 millirem add up to 1 rem-the Environmental Protection Agency Evacuation standard." The EPA has not established a standard, but a set of guides. Specifically, the EPA states in section 2.1.1, EPA 400, "These Protective Action Guidelines (PAGs) are expected to be used for planning purposes for example, to develop radiological emergency response plans and to exercise those plans. They provide guidance for response decisions and should not be regarded as dose limits. "

- Chapter 3, page 25, Figure 3-4: Levels of Acute Exposure and Health Effects: the table title needs to be revised since the table includes regulatory and background radiation levels. The portion concerning 0.5 rem is not correct. NRC regulations (10 CFR 20.1301) do contain a limit of 0.1 rem for individuals in the general public exclusive if background and medical radiation. In addition, the paragraph preceding the table describes the standards as based on doses occurring with a few hours to a day should be corrected to reflect the table content.

- Chapter 3, Table 3.1, page 26 of the draft report identified an NRC dose limit for natural background radiation (excluding man-made sources) to be 500 millirem per year. The NRC does not regulate exposure to natural background radiation. 10 CFR 20.1301 states "Each licensee shall conduct operations so that the total

effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 millisievert) in a year, *exclusive* of the dose contribution from background radiation . . . "

- Chapter 3, page 27, first full paragraph, first sentence: The counties should be included in this statement if their hazard assessment procedures were reviewed as well.

- Chapter 3, page 30. Throughout the report there seems to be an effort being made by the report authors to fuse the REP program with the CSEPP program; CSEPP program terminology is used with the caveat that the term is interchangeable with REP terminology. For example, on page 30 the authors chose to use a chemical plume rather than a radioactive plume to explain their point. This is misleading; the two types of plumes and their effects are quite different. If this document is for REP planners, programmers, and practitioners, all CSEPP references should be deleted.

- Chapter 3, section 3.5.1, p. 27. The seven steps shown in Figure 3-5 are not the sequence in a well structured emergency plan for a nuclear power plant. Initially, the utility goes from step one to step seven directly assuming the anomaly is of sufficient magnitude. The other 5 steps have already been considered based on best engineering judgment. After the critical initial actions are taken and data becomes available, the further analysis and possible expansion of protective actions is a part of the IPEC response plans. When discussing the ways that dose assessment is accomplished when data is available, the report accurately discusses the two methods available, a computer model and a graphic system. Most of the discussion concerns the graphic system which is the backup method. A part of the PAR process includes a circular area to a specified distance plus three 22.5 degree sectors in the downwind direction. This means that any ERPA impacted by either the circular distance and by a 67.5 degree wedge in the downwind direction, is included in the PAR

- Chapter 3, Section 3.5.4.1, the first paragraph is confusing. First it states that there is no standard model. That is true. Then it states that many computer models are "home grown," which is an unclear statement. The next sentence states that RASCAL is the most common model. This seems to be internally inconsistent.

Chapter 4 – Review of Emergency Plans: Compliance With Regulations

- Chapter 4, page 40, 4th paragraph and footnote; it is noted that the report authors did not use the current FDA guides that are required in the plans.

- Chapter 4, section 4.12, New York State Plan Review, identifies a "significant issue" regarding protective action guidelines [Guidance] being consistent for all the population and speaks to the concerns regarding incarcerated individuals.

Yet, in section 4.5.2.1, page 68 is a detailed discussion of the correctional facility planning. This seems to be internally inconsistent.

- Chapter 4, section 4.1.3, Putnam County Plan Review, references a "more significant issue" regarding the levels of personal protective equipment for radiological workers as identified during the plan review. The authors then continue with the statement that this did not present a significant threat so it is not mentioned. This statement is not listed in Appendix C, Table 3. This is inconsistent. First, it is considered a "more significant issue" and then the authors state "issue is not a significant threat."

- Chapter 4, section 4.4, page 59, states that there is no pre-identification of which protective actions would accomplish the best dose savings under different accident release circumstances." There is general guidance. All the variables listed by the authors are taken into account at the time of the decision.. To try to pre-determine given the vast number of variables could clog up a plan that earlier the authors indicated should be simple and easy to use. It is the responsibility of the decision-makers and dose assessment to take into account all of the variables prior to making a decision.

- Chapter 4, section 4.4, page 59, indicates that emergency managers will provide protective action recommendations to the people. At the time a protective action is told to the public, it is considered to be a protective action decision or PAD. It should be noted that while the authorized individual can make a decision, individual members of the general public may or may not act on the decision thereby treating it as a recommendation.

- Chapter 4, section 4.4, page 61 & 62, references the CSEPP method to develop protective action strategies. This "two-part" process is what the REP dose assessment and the local decision-makers already do. The authors appear to advocate "sheltering" even though NUREG-0654, Rev.1, Suppl.3, requires a default evacuation of the 2 mile ring and 5 miles downwind. The authors and particularly those with CSEPP experience should be aware that a chemical stockpile has a greater probability of exploding than a nuclear facility and thus the amount of time to discuss and decide upon a PAD differs.

- Chapter 4, section 4.4, page 63 discusses the need for a MOU among the 4 counties involved in a multi-jurisdictional evacuation. The report accurately states that the decision process is not unilateral for any County. Each of the Counties is well aware of the decisions and the evacuation routes of the other Counties. The statement about there being benefits of having up to date MOUs is made without justification or an explanation of what is not currently being accomplished.

- Chapter 4, section 4.5.1. The authors essentially recommend a change in FEMA policy that the medical facilities exercise their radiological portion of their plans

more frequently than once every 2 years. It is important to note that the medical facilities do radiological drills every year as part of normal practice; FEMA is often invited to evaluate the off-year drills and does so when asked.

Chapter 5 – Emergency Planning Bases and Systems

- Chapter 5, section 5.1, page 78, indicates that the EPZ population has increased 7.3 percent. The report, without citing existing policy, indicates this requires an update. NUREG/CR-4831, "State of the Art in Evacuation Time Estimate Studies for Nuclear Power Plants," (March 1992) states that if there is a difference of 10 percent plus or minus than new evacuation time estimates are required. Prudent planners would develop a new ETE based on the percentage and Indian Point has done so although this is not acknowledged in the report. In addition, comments regarding development of evacuation time estimates and not mixing transient with the permanent population indicates a lack of familiarity with the guidance on what is to be considered in an evacuation time estimate as set out in Appendix 4 of NUREG-0654/FEMA-REP-1.

- Chapter 5, section 5.2.4, page 95, indicates that by "evaluator observations only Westchester County used the ETE in decision-making." This is not true. The decision-makers in the counties used the ETE throughout the exercise in making decisions.

- Chapter 5, section 5.3.1, page 106 indicated that the NRC had a problem with the maintenance of Personal Home Alert Devices (PHADs) in use at Indian Point. The NRC has not identified any problems with such devices at Indian Point. PHADs are not used by Indian Point as part of the Alert Notification System.

- Chapter 5, section 5.4.3.1, page 131, and Chapter 8, page 187, first mixes observations that should be in Appendix C with their summary and secondly states that Putnam County had a problem with the primary or Executive Hotline telephone system. This is inaccurate. Orange County had the problem and thus all the counties switched to the back system so that Orange County would be on line. Furthermore, there was a speaker system as all decision-makers could hear the discussion during the exercise.

Chapter 6 – Review of Indian Point and Millstone Training Programs

- Chapter 6, page 145, states that "The Nuclear Regulatory Commission requires tests to ensure that training has been effective. Qualification examinations are required by position. These tests must be sufficiently different from year to year. The qualification examinations are required at specified frequency to ensure that skills and knowledge are retained." The NRC does not require tests or qualification examinations for emergency response organization personnel. The requirements for training for emergency response personnel are contained in 10 CFR 50.47(b)(15) and Appendix E to 10 CFR 50. The NRC evaluates the

(licensee's critique of the) performance of the emergency preparedness personnel in key areas such as classification of emergencies, notification of offsite authorities, and development of protective action recommendations.

Chapter 8 – Review of Previous Inspection and Exercise Reports

- Chapter 8, section 7.2.1, page 151 indicates that the Public Information Brochure should include all the steps taken during the evacuation of students and "thus fails to educate residents on the emergency response plan." This ignores the fact that schools provide parents with information regarding inclement weather or other emergencies, including radiological emergencies, at the beginning of each school year. Also, FEMA encourages parents to speak with their chld's school to learn what will occur during an evacuation. (Citizens Corps materials)

- Chapter 8, section 8.1.4, page 169 indicates that the evaluation process uses "objectives." However, the new exercise evaluation methodology does not rely on "objectives" or "points of review", but is a performance based outcome approach

- Chapter 8, section 8.1.4, page 170, first paragraph, last sentence is inaccurate. "During the historical review, we identified ARCAs as well as issues that could eventually lead to an ARCA or Deficiency designation or worse--a system failure-- but were not specially labeled as ARCAs or Deficiencies." See comments on Appendix G.

- Chapter 8, section 8.1.4, page 170, third paragraph and table contain outdated and inaccurate statements based on the old exercise evaluation methodology. Since the authors observed the 2002 exercise that used the new methodology they should have included a discussion of the new system.

- Chapter 8, section 8.1.4, page 174, paragraphs 3, 4, and 5, indicate that possible shadow evacuations were not considered. However, there was discussion on this topic, at least in Putnam County. In addition, the Operations Officer and the Sheriff constantly informed the decision-makers as to any traffic congestions or other road hazards, and provided assistance in clearing impediments to evacuation.

- Chapter 8, pages 177 – 178. While it is true that the MIDAS system experienced problems in some locations in the past, requiring at least one Area Requiring Corrective Action, the report fails to note in this section that the MIDAS system has been replaced by a new system, MRP-DAS as discussed in the report in Section 3.5.1. During the 2002 exercise, the new system operated without problems and provided information to all four Counties and the State.

- Chapter 8, section 8.1.4, page 183, last paragraph, indicates that FEMA requires unannounced or "no-notice" exercises. However, the authors fail to mention that FEMA provides a 7-day window for unannounced exercises.

- Chapter 8, section 8.1.4, page 184, indicates concern over terrorism, including flying an airplane into or onto the reactor building. It should be noted that the Electric Power Research Institute has completed studies that indicate "nuclear power plants are extraordinarily strong and would prevent a release of radiation, even if struck by a large commercial airliner under the worst conditions."

- Chapter 8, section 8.1.4, page 187, ignores the FEMA initiative, "Immediate Correction of Issues." Under this policy directive, rather than wait one or two years, the training and re-demonstration can occur immediately, thus enhancing the learning curve.

- Chapter 8, section 8.1.4, page 189, provides a chart indicating the length of time it takes to issue a report. Unfortunately the authors failed to indicate that this was, for the Indian Point Exercise of November 15, 2000, the Narrative Summary Report, which includes all of the detailed write-ups. The official Final Exercise Report, which listed all of the issues, plus many corrective actions that had already been implemented and successfully demonstrated, was completed in much less time (April 2001). The initial feedback was provided earlier than that in the Draft Exercise Report, which was forwarded to the State and counties within weeks of the exercise.

Chapter 9 – Architecture for Analysing Coordinated and Integrated Response

- Chapter 9, page 192, last paragraph discussion states "We did not see site-specific outcomes defined and measured that allowed an objective qualification of the level of preparedness..." We note that the authors of the NY State Report did not participate in the post-exercise meeting with the RAC Chairman nor have they read either the Draft or the Final Exercise Report.

Chapter 10 – Exercise Analysis Using the Public Protection Performance Architecture

- Chapter 10, Page 202, Figure 10-2: A legend is needed to identify what the white, light grey and dark grey areas represent. The title is unclear.

- Chapter 10, page 202, first paragraph, second sentence: Clarify whether the Indian Point Facility notified off-site authorities with a PAR or just that a release is in progress, within about 15 minutes.

Chapter 11- Conclusions and Recommendations Regarding Public Safety

- Chapter 11, pages 206-207, consistently references compliance with regulations that looks at isolated functions rather than the "big picture." The authors do not

fully recognize that the evaluation process is a results oriented process that requires the inter- and intra-mixing of all functions in order to achieve a successful goal.

- Chapter 11, pages 207, first paragraph, the authors recommend that their recommendations will require "...a major departure from the focus on compliance and regulations...." It should be clearly understood that there are specific required regulations for emergency response around nuclear power plants that cannot be ignored or set aside. FEMA is responsible for ensuring that the health and safety of the public can be protected. To ignore or set-aside regulations would be inappropriate and a violation of FEMA's responsibility to the public.

- Chapter 11, page 208, paragraphs 3 and 4, indicate that First Responders are sent out to specific points and measure radiation. The authors indicate they did not see a need for this; however, they go on to interchange the offsite with the onsite monitors and detectors. Furthermore, they indicate they did not observe this data being provided back to Indian Point. This information is directed to the county, where dose assessment and tracking is being performed along with the IP assessment process. Each of the Counties had technical liaisons from the utility present that provided a two-way communications between the Counties and the staff in the EOF. The confusion and mixing of onsite response with off site response is consistent throughout Draft State Report. Finally, the term First Responders is misleading. A First Responder is universally recognized as either fire or police. The Plume Dose Field Monitoring Teams are emergency workers and are highly trained in taking field measurements.

- Chapter 11, page 209, paragraph 4 and 5, the report is contradictory. First it indicates sirens will not be heard inside and then it states that voice capable sirens should be considered. Voice siren messages are less audible than the siren tone.

- Chapter 11, page 209, second paragraph, the authors indicates that the cities are not directly informed but must wait for the counties to inform them resulting in shadow evacuation or spontaneous evacuation in a plume exposure emergency planning zone, and role conflicts for emergency services personnel. According to New York State Law the county executive is the only one who can order a county evacuation. It is noted in the plans that local police and fire departments are notified and are to respond accordingly. County plans specify that the local jurisdictions are notified. In fact the largest and closest town to the Indian Point facility has a RECS terminal that is to be manned on a 24-hour basis.

- Chapter 11, section 11.1.2, pages 210-211 discusses alerting methods and states "People can be better alerted by a combination of various pathways." The plan discusses siren, tone alert radios, and the new EAS system that utilizes radio, tv, and cable. Voice-capable sirens are not considered, as the authors indicate there are mixed results on their effectiveness and in the hilly areas around Indian Point

they could be worthless. There is also the statement that individuals may travel from New York City to Westchester and Rockland Counties to work and not have access to media outlets. This statement is without substance considering the availability of radio, cell phones traffic and access control points established as part of all plans to control travel within the EPZ.

- Chapter 11, section 11.1.2, page 210, discusses the issue of communicating with the minority populations in the 4 risk counties. The new Public Information Materials are bilingual as are the EAS and follow on messages.

- Chapter 11, section 11.1.1.3, paragraph 4, page 213, indicates that the authors observers at the full-scale exercise noted "...emergency managers or decision-makers unnecessarily argued about the correct protective action during the response." The phrase "unnecessarily argued" is may be too strong a point. The need to have discussions is necessary to insure that the best possible decision is made. Decision-makers consult with their EOC staff for information, consulted their Dose Assessment staff, reviewed the Evacuation Time Estimate and discussed what they were planning with the other risk counties and the state. There were no "arguments" during this process.

- Chapter 11, page 213, concerning the evacuation of "Sing Sing" (the Ossining Correctional Facility). The State plan clearly indicates that this correctional facility will not be evacuated but will shelter in place.

- Chapter 11, page 213, last paragraph, last sentence is incorrect. The County plans all contain a provision to use the release duration in their assessment. If there is no definitive data available, a 4-hour release duration is used.

- Chapter 11, page 214, paragraph at top of page, is not accurate. The first siren sounding, at Site Area Emergency, occurred approximately 2 and ½ hours before there was any release. When General Emergency was declared and sirens again sounded, there was no release. The scenario wind speed was 12 miles per hours. The report states "Despite these caveats, the half hour to two hours probably does not provide enough time for the warning to disperse through the community and for the protective actions to be completed. " There is no system in existence that can assure that protective actions can be completed before a plume arrives. The goal of emergency preparedness is to provide dose savings (NUAREGA-0654 at 6). To suggest that the exercise report missed a critical point, as defined by the report writers but not by the published EP rules and regulations is inappropriate.

- Chapter 11, page 214, paragraph 3 states "a related protection issue that is not directly associated with evacuation is the use of potassium iodide (KI) tablets." KI does have an association with evacuation. A very real and signification concern that was not addressed by the authors is the public concept that if they take a KI tablet then they would not have to evacuate.

- Chapter 11, page 214, paragraph 4 discusses sheltering as a protective action. NUREG-0654/Rev.1/Supplement 3 clearly states that evacuation of a two-mile ring around the plant and 5 miles downwind is the preferred protective action option for the population near the plant. Basically, the risk of an evacuation is lower than the risk of remaining in shelter in these areas.

- Chapter 11, page 216, paragraphs 1 and 4 discuss the use of the trains and watercraft for evacuation purposes. The authors discuss using the river to evacuate school children. The question is who is liable if there is an accident on the river. Stopping the trains is necessary to prevent individuals, foodstuffs, or other items from entering a potential hazardous area.

- Chapter 11, Section 11.1.1.4, There are Serious Issues with the Response to Information Needs: The first sentence seems inconsistent with Chapter 7 (Review of Public Information and Education Programs) which seems generally favorable but does offer suggestions for improvements in terms of content and effectiveness.

- Chapter 11, section 11.1.17, second paragraph discusses the older evaluation methodology and refers to "grading" and indicating "...the cause-and-effect relationship of the function to the outcome cannot be established." This comment is not based on reality or actual practice of the evaluation methodology. The exercise that was observed, by individuals not familiar with REP exercises, was evaluated on a performance-based outcome. To indicate anything else is misleading.

- Chapter 11, section 11.2, chart: Training – already in place. Utilities have training programs in place and require certification of their staff. Off- site there are a number of training opportunities through Emergency Management Institute in a number of key responder areas. The authors state existing processes that State and county emergency officials are aware of.

- Chapter 11, section 11.2, chart: Exercises – this has been an on-going process since the initiation of the first FEMA evaluated exercise. Exercise evaluations are currently performance based, and lessons learned, large and small are integrated into the plans and procedures. The authors are stating existing processes.

- Chapter 11, section 11.2.1.1, page 223, paragraphs 1-3, talk about "adopting performance-based system" to evaluate effectiveness. Once again, the performance-based system is in place and was used during the 2002 exercise.

- Chapter 11, section 11.2.1.3, page 227, item 3, first paragraph, last sentence "If the protective strategy modeling indicates that stable iodine has the potential to reduce exposure, a coherent approach...." This statement is incorrect. KI does not reduce exposure. It merely protects the thyroid, not the entire person. It is critical that the public understand this difference.

- Chapter 11, section 11.2.1.3, page 227, item 3, second paragraph, last sentence states "all resources (federal included) that could be expected to be deployed should be included in exercises periodically..." This is already occurring, mainly in plume/ingestion pathway exercises.

- Chapter 11, section 11 2.1.3, item 3, paragraph 4 , page 227 pre-staging evacuation kits for students at schools. Included would be medicines. This would be very costly to a low-income family that may have a child on expensive medication. To buy a bottle and store it only to discard it once it expires is wasteful. Furthermore, school plans indicate that the evacuating school will bring all medications that are available at the school. Many students have meds at school with a doctor's statement allowing school nurses to administer them.

- Chapter 11, section 11.2.2.2, first paragraph, last sentence, page 229, discusses special facilities such as factories with a high noise level that would impede the hearing of the sirens. It should be noted that most of the counties have placed tone alert radios in large facilities.

- Chapter 11, section 11.2.4.1, page 234; entire section is a duplication of other areas and a restatement of fact. The last paragraph recommends that "...those who make protective action decisions and be involved in communicating with the public through the media....should regularly participate in scheduled exercises." The authors imply that decision-makers are not involved in exercises. This is not correct. Historically and during the recent exercise all county and state decision makers were fully involved. Although differences of opinion regarding FEMA findings often occur, New York State and its counties have always taken the exercise process seriously with the ultimate goal of insuring life and property are protected..

- Chapter 11, section 11.2.5, page 234, last paragraph states there should be a comprehensive schedule of quarterly drills and annual exercises. The authors are restating that which already exists. The plants, states and locals do have drills and annual exercises. Training is an ongoing annual process. FEMA evaluates the biennial exercise as well as being involved in scores of out of sequence drills and reviews.

- Chapter 11, section 11.2.5.2, page 235 paragraphs one and four would create new policy that would require revision to 44CFR350. Most, if not all, state and local emergency managers conduct quarterly, if not semi-annually, drills of their respective organizations for events other than radiological.

- Chapter 11, section 11.2.5.6, page 236, discusses the need for upgrading communications capability with all facilities. As new technology is developed this should be a priority to improve communications. According to section 11.2.6.2, pages 237, back up radio systems were not always available. This

statement requires a specific example. The Counties and the State had access to several back-up radio systems and the use of at least one of these systems was demonstrated during the exercise. It is a requirement that at least one backup system be available. During the exercise there was outstanding support from the volunteer radio groups.

- Chapter 11, section 11.2.7, page 237, second paragraph, regarding the statement on "...newer technologies such as tone alert radios". This has been addressed before; however, all counties do have and do use tone alert radios and it is stated so in the plans for each county.

- Chapter 11, section 11.2.7.1, pages 238-239 are partially correct. The 1970's vintage plastic overlays are a backup method for hazard assessment in the counties. The primary is a computer-based program. The utility has 16 permanently mounted real time radiation measurement devices. Their read out is transmitted near real time to the counties and state.

- Chapter 11, section 11.2.7.2, page 239, second paragraph appears to be duplicating what was discussed in section 11.2.1.et seq.

- Chapter 11, section 11.2.8, page 240, references "...the unique consequences of a terrorist attack..." A terrorist attack would be unique. However, the off site response would be the same.

- Chapter 11, section 11.2.8, page 240, second paragraph, second sentence, "Also, plans and exercises should be directly based upon the achievement of the current standard for does to the public." This sentence is unclear. The PAGs are projected doses, which warrant taking an action they are not dose limits.

- Chapter 11, section 11.2.8, page 241, fourth paragraph, discusses how the systems and practices were developed in a different environment (pre-911). However, the response to an incident will remain the same.

3. FEMA Comments on NY State Report, Appendix G – FEMA Exercise Report Findings

(Please insert Appendix G table here.)

4. FEMA Comments on NY State Report, Appendix I – 2002 Indian Point Practice and Full-Scale Exercise Observations

This component of the New York State report contains information based on observations made during the practice drill and the actual exercise for Indian Point Energy Center. The concept of observing a practice drill and then the actual exercise is good; however, as with other parts of this report there are factual errors.

FEMA often observes the practice drills, but not in the evaluator role. Rather the FEMA personnel are there to observe and provide guidance to the participants. During the actual exercise, FEMA personnel are in their evaluator roles and cannot do this. Therefore, it was good that the authors of this report did attend the practice drill as well as the exercise.

This section of the plan would have benefited from better organization of the section. That is, comments regarding the drill (identified as Practice) should have been followed with comments regarding the actual exercise (identified as Full Scale). Thus everyone, participants and the general public, could have discerned the difference and improvement based on practice. It is important to note that a practice exercise is just that: practice. While FEMA evaluators often observe practice drills and exercises, what transpires during a practice is never included in the final exercise report; it would be unfair to include these observations. If the intent was to show how the practice led to a successful demonstration of evaluation criteria, the table that is Appendix I falls short in that endeavor. The observations on the Practice Exercise are mixed in with the observations on the Full-Scale evaluated exercise, thus losing emphasis and creating confusion. In addition, the majority of comments, even those that are positive are written in the negative; i.e.; no command and control management issues were noted, rather than, command and control functioned well.

There are a number of errors, duplication of statements, and unsubstantiated value statements within this section that need to be addressed. Only a portion will be addressed here.

General

Full-Scale, first General comment, page I-1 indicates that the counties and the States did not communicate regarding dose assessment. This is not accurate; FEMA evaluators did observe the counties and the State discussing dose assessment. During the exercise all four counties and the state compared dose projections with good agreement. When the utility expanded its Protective Action Recommendation based on a projected dose exceeding the Protective Action Guideline at 5-miles, the decision group (4 counties and State) accepted with a minor exception the recommendation.

Full-Scale, second General comment, page I-1 indicates that dose was not factored into Protective Action Decision-Making (PAD). This statement is not in accordance with

current federal policy for the initial PAD. The current Federal position is to make Protective Action Decisions (PADs) based on plant status. The plant status has been analyzed and if conditions do not improve, then onsite serious doses (potential early health effects doses) are possible. If on the other hand things onsite go well, there may note even be a release of radioactive material and therefore no dose. The problem is that when the plants get to General Emergency it is beyond the design basis of the facility. No one can accurately predict which way the onsite situation will go. Therefore, NUREG-0654, Supp 3 has been adopted. Therefore, implement PADs based on plant status without reference to doses. After the plant status PADS, use dose projections based on effluent monitors or field monitoring data to expand the earlier PAD. This process was demonstrated in all four counties and at Albany.

Page I-45, Full Scale, indicates that two of the 4 EAS messages were released while the counties were in media briefings. The next statement indicates that the reviewer/evaluator is unclear as to current technology: "In a real situation, this would create problems since the media could not cover the live press briefing while the EAS message is being aired." The EAS message is broadcast over the EAS system with the emergency tones, etc. The media could continue their press briefings as they are in another location from the EAS equipment. A reporter or a camera crew would not be interrupted at the briefing nor would they necessarily be aware of the EAS message going out. They would be receiving the information from the briefing and then filing their reports with their radio or television stations, or their newspapers (or other print media).

New York State

Page I-13, third row, states that the other jurisdictions did not act. However, all jurisdictions were in communication and coordination with each other and all did respond.

Page I-13, fourth row, states that the State RECS data was not adequately distributed. However, the communications room provided information to everyone in a timely manner.

Page I-20, fourth row, indicates that the State Department of Health did not communicate with the county Department of Health. Communication was observed between these two groups.

Page I-20, fifth row, states that verification of information (what information is not stated) to the four counties did not occur for 40 minutes. There was no effect that would create an exercise issue. The report should be specific about what information is being discussed.

Page I-20, last row, indicates there was no explanation for the "State of Disaster Emergency." This information is contained within the plans; the county decision-makers fully understand what this entails.

Page I-21, fifth row, discusses need for documentation. The status boards and all other information was maintained and provided to all participants.

Putnam County

Full Scale, page I-15 indicates that during the practice that the radio system was jammed. This is not accurate. This occurred during the actual exercise. The radio operators were able to compensate for this and as they are extremely knowledgeable regarding radio transmissions they indicated that the sound was "keying".

Full Scale, page I-23: The comment regarding the facility is useful information but is only a value statement. The question is, is the facility adequate for emergency response? The facility did not provide any hindrances to the exercise. It is understood that a newer, more state-of-the-art facility is being planned and built.

Full Scale, page I-23: The Executive Hotline did function. However, as Orange County was having communication problems; all counties went to their backup system (not their secondary system).

Full-Scale, page I-6 and Page I-32 are in conflict. Page I-6 indicates that no one observed or announced set-up of access control and then on page I-32 the statement is made that all went well. An evaluator did observed the establishment of traffic control points. A second evaluator went to an outside location and observed and interviewed law enforcement personnel that would staff these points.

Practice: Page I-31: The term "relatively isolated" is used to describe where the decision-makers are located within the EOC. This is a misleading statement. The decision-makers are strategically located based on available space and the ability to operate in an emergency environment. Using the space available to them, Putnam County has historically demonstrated full command and control.

Full Scale, page I-41: Putnam County heard about the release from their liaison at the EOF and then the Health Department. These personnel were doing their jobs.

Full Scale, page I-42: the number in the public information brochure is to the county EOC. Additional numbers will be provided if there is an actual emergency according to the plan.

Full-Scale, page I-43 and Page I-45 are in conflict with each other. First the report acknowledges that Putnam County had the first press release at the first press briefing and then, on page I-45, it states that the first press release was up too early. "Too early" is a value judgment and there is no explanation of why it was too early or what negative effect it had. If Putnam County was going into a press briefing, they made their press release accordingly.

Orange County

Full-Scale, page I-5, indicates that there was conflict with Rockland County on home rule of emergency response and planning area 39 as to decision-making authority. There no conflict. There was a productive discussion between Orange and Rockland Counties that brought resolution to the question in a short time. There was no issue.

Full-Scale, page I-14, indicates that Orange County had problem with the Executive Hotline. This is correct . All other counties switched to their backup lines to accommodate this problem.

Full-Scale, page I-14, indicates that the County Health Official was not willing to make decisions and had to defer to the State. This statement is not accurate. Pursuant to New York State law, the County Health Official did as required.

Full-Scale, page I-22, discusses the size of the EOC. This is a value judgment. The facility is and continues to be adequate to support emergency response functions. This facility, like all county and state EOCs has been tested and has been found to be adequate.

Rockland County

Full-Scale, page I-6, indicates that there was conflict with Rockland County on home rule of emergency response and planning area 39 as to decision-making authority. There no conflict. There was a productive discussion between Orange and Rockland Counties that brought resolution to the question in a short time. There was no issue.

Full-Scale, page I-24, first row, indicates issues concerning the executive hotline. Again, the executive hotline worked well. However, Orange County was having problems, so all counties switched to their backup system.

Full-Scale, page I-24, second row, discusses the location of the SEMO representative. This is not an issue and there was not effect.

Full-Scale, page I-24, fourth row, discusses how RACES was under-utilized and the sending of picture date via cameras but no computer in the EOC could accept the data. This is not their responsibility.

Westchester County

Full Scale, page I-8, second row, states that personnel did not talk about 'hazard' arrival time when making protective action decision. Taking 'hazard' to mean 'plume', the County Executive, County Emergency Management Director, Director of County Public Health, the Dose Assessment staff discussed the plume arrival while planning protective action decisions. In addition, the county coordinated this information with the other three counties and the state.

Full Scale, page I-8, third row. states that sirens were sounded before schools were informed of the event. The School Coordinator notified the schools as required in the plans. Several schools were evacuated before the EAS message was initiated. The statement that sounding the sirens will create "increased traffic congestion around schools are the sirens are sounded..." is unfounded and speculative. The sounding of sirens does not invoke immediate reaction to drive to a school.

Full Scale, page I-9, second row, discusses that EOC personnel did not talk about traffic control points. The Sheriff did set up the traffic control points in the EOC. An evaluator did travel to another location to interview law enforcement personnel who would initially staff traffic control points. If the phrase "Command Center" means the EOC, there was a map that clearly indicated where the traffic control points were located.

Full Scale, page I-9, third paragraph, discusses the issue of shutting down the trains and thus "trap workers who rely on that mode of transportation." The author does not address the other passenger and freight trains that transverses the EPZ. In addition, all trains are stopped outside the EPZ. Any workers inside the EPZ would be evacuated by either personal vehicle or bus.

Full Scale, page I-16, third row, states there were problem with the executive hotline and mentions that Putnam County could only be reached by the backup system. The county with the communication issue was Orange County. The fact that the backup system functioned is further support to have backup communications systems.

Full Scale, page I-16, fourth row, states that Westchester County not catching dismissal of "SIP schools" to emergency response and planning area's that were evacuating until after dismissal. The statement is not clear. The acronym of 'SIP' is unclear.

Full Scale, page I-16, fourth row is inconsistent with Page I-35, fourth row. Page I-16 appears to imply that students were released to areas that were being evacuated. However, Page I-35 indicates there were no command and control issues. Therefore, all decisions were coordinated and communicated effectively.

Full Scale, page I-25, third row, states that a "school representative showed up late , county transportation back-filled the school for the first hour, which is a coordination management issue'. There is no indication by what is meant by "late" nor any indication as to when this representative was notified to report to the EOC. Furthermore, the fact that another EOC representative was able to "back fill" the position and do their own without an negative impact on the exercise is reflective of good training and teamwork.

Full Scale, page I-25, fourth row, states that the EOF could only be reached by the primary system. This would indicate that the backup system to communicate with the EOF was not demonstrated or used. This is not an exercise issue.

Full Scale, page I-25, fifth row, states that the phones were placed in the middle of the facility and the recommendation would be to move the phones around in the future. This statement is unfounded and a value judgment. There are a number of phones throughout the EOC facility. The arrangement of telephones is to expedite the needs of the various EOC representatives in accomplishing their emergency responsibilities. The arrangement of the EOC is functional and has not created any negative impact on any EOC activities.

Full Scale, page I-25, sixth row, states that the County Executive and deputy "...could have displayed a better working knowledge of basic radiological concepts." This statement is totally unfounded. Granted the County Execute and deputy have a myriad of activities their knowledge of basic radiological concepts better than most individuals in similar positions across the country. Furthermore, these individuals have a number of staff that they can and do rely on to supply information to them. Among the staff members are the Accident Assessment staff, the County Emergency Manager, the County Health Department (the Director was in attendance during the exercise) and the utility liaison located in the EOC.

5. FEMA Comments on Appendix J: Advocacy Issues

This appendix provides the reader with a compilation of the various concerns and issues so identified by a variety of advocacy groups. The term "Advocacy" is meant as a generalized term. One concern is the last sentence in the first paragraph, where the ambiguous statement is made that "...many who are responsible for portions of the plan(s) have also expressed reservations about some of its more salient aspects." There is no indication of what portions of the plans those who are responsible for are most concerned about.

The authors of this report provide the concerns as basic well-grounded facts rather than clarifying where there is misinformation or half-truths. For example: page J-1, last bullet indicates that the plan relies on objective data that is outdated and incorrect. The authors could have cited in their report where they indicate that this information is currently in the process of being updated. Instead the statement is left as though nothing is or has occurred.

Page J-1, second bullet discusses the issue of parents picking up their children from school rather than going to the designated center and that children in school outside the risk area will be picked up by their parents. It should be noted that FEMA is encouraging as part of Citizen Corps for parents to discuss with the schools what their plans are for evacuation.

Page J-1, third bullet is unclear. It reads that "...emergency officials can give evacuation information to the public and that the information will enable certain populations (like school children) to be evacuated earlier than other populations." Just how the information will enables this is not explained. Many communities have plans that require the early evacuation of school children before the general population.

Page J-1. fourth bullet indicates that the emergency plans fails to consider radiation release from spent fuel pools. First, just as with a terrorism incident or a leaky valve, the off-site response will be the same. Second, unlike the reactor core, there is nothing 'pushing' radiation up and out beyond the site boundary to off-site areas. Third, cooling pools are 40 feet of water encased in concrete within a concrete an steel structure. Any time of radiation release is highly speculative.

Page J-1, fifth bullet indicates the plans assume that emergency workers will return to the risk area. The implication is that they will not. However, it should be noted that emergency workers are either removing people before a release or staffing access and traffic control areas outside the release area. Any emergency workers that would enter the risk area will either be emergency medical crews with appropriate protection to save lives or highly trained field teams taking samples.

Page J-1, sixth bullet discusses the "assumption" that there will be a significant amount of time between notification of government officials to evacuate and any radiation release. First, exercises are artificial regarding times. Only in a "fast-breaker" might there be a short time period. Unless the release is being pushed by the generator, the length of time would depend on the wind speed and other variables.

Page J-1, seventh bullet discusses that "sheltering-in-place" is adequate protection. There is no discussion by the authors regarding NUREG-0654, Rev.1, Supp. 3 that clearly specifies evacuate 2 mile ring and 5 miles downwind.

Page J-2, third bullet, plans for contaminated water supply would be considered during the post plume portion of the exercise or actual event. As the 2002 exercise was plume only, the authors would have had to interview state personnel to learn what has pre identified. In addition, there would be federal involvement and resources based on both the Federal Radiological Emergency Response Plan and possibly the Federal Response Plan.

Page J-2, fourth bullet, indicates that the protection of pre-school children is inadequate. There is no discussion as to what is considered adequate. The county plans do identify the per-school and day care providers and have procedures to notify and evacuate them.

Page J-2, sixth bullet, is concerned about evacuation plans for colleges. Colleges are considered part of the general population.

Page J-2, second paragraph contains an assortment of misguided concerns based on partial information. These concerns include not planning for a "fast breaker" bu the utility, the capacity of area hospitals to treat workers and citizens, refusal to medical personnel to report, and the location of reception centers. The hospitals are not used to do initial monitoring of individuals; that is to occur at the reception centers. The hospitals will be used in the event someone requires medical attention, broken leg, heart problems, etc., and capacity should not be exceeded.

Page J-2, third paragraph, is concerned with terrorist making a "dirty bomb" from the spent fuel rods. First the terrorist would have to obtain one. The rods are kept in pools of water 40 feed deep inside a concrete structure. There is no way anyone can just walk in and take a spent fuel rod and leave. Furthermore, without proper protection the individuals would b exposing themselves to possible contamination.

As for the security issue and not fixing the hydrogen leak, those should be addressed by NRC.

Page J-3, the paragraph throws out various issues that the advocacy groups have and yet the authors do not address how within their own report they have shown many of these are non-issues. The authors mention that the advocacy groups reject the relevance of the 10-mile emergency planning zone, but do not indicate why. The inadequacies of the roadways has been stated in several locations throughout this report.

The evacuation time study has been evaluated by experts in road design and capacity. Nonetheless, the advocacy groups have the perception that the roads are inadequate. The roadways are the concern of the state and local jurisdictions, not the utility or FEMA.

The lack of effective protective action strategies is a spurious statement as shown by the dedications demonstrated during the 2002 exercises and the exercises preceding it by emergency responders. Although the report discusses both Millstone and Indian Point, the last sentence of this paragraph must be read carefully. Although the sentence is referring to Millstone, the implication is that it could be referencing Indian Point and that the area derives no benefit from the plant, only risks.

6. FEMA Comments on 44 CFR 350.13 Petition for Withdrawal of FEMA Approval of the Indian Point Radiological Emergency Preparedness Plan, June 17, 2002

A. The Evacuation Travel Time Estimates for the Indian Point REPP fails to meet the requirements of NUREG-0654/FEMA-REP-1.

The Evacuation Time Estimate (ETE) study provides estimates of the time required for the evacuation of various portions of the EPZ and under various conditions. It is based on census figures and has been revised based on the 2000 census, but the results have not yet been incorporated in the plans. The petition correctly quotes several NUREG-0654 criteria and Appendix 1 from the original 1980 version of the document. What it fails to recognize is the revised Federal guidance as published in NUREG-0654 FEMA REP-1 Rev.1 Supp. 3, July 1996. The original position, as stated in Appendix 1, included the use of the ETEs in the decision process and stated under the General Emergency discussion in Appendix 1, Section 4.c, sheltering should be recommended where evacuation cannot be completed before transport of activity to that location. This original position placed significant emphasis on the ETEs as cited in NUREG-0654, Part II, J.10.m. Information and analysis not available in 1980 has lead to the position expressed in Supplement 3. For core melt or potential core melt sequences, evacuation is the recommended protective action for the population near the plant if evacuation is possible (Supp. 3 at 3). There is no dependence on the ETE in this decision. Analysis has shown that for serious accidents the dose from ground contamination may become very significant. Having people shelter only increases the dose from ground contamination. Sheltering may be the preferred protective action if evacuation is impossible or particularly hazardous, but for areas near the plant, the ETE is not determinative. If it is known that the release of radioactive material is to be of short duration, sheltering may also be the preferred protective action. Supp. 3 states that except for containment venting, short duration releases are not predictable. Early evacuation will avoid most of the release and accompanying dose for a long duration release. There is no dependence on the ETEs for any of these early decisions and while up to date ETEs are useful, their basis in the decision making process has diminished between the original publication of the NRC/FEMA guidance and the current time. The primary value of the ETE study currently is to assure that the most effective traffic management approach is included in the plans. The role of protective action decision-making is to reduce dose and based on the best available knowledge, the early evacuation, if possible, is the best means of reducing dose for those near the plant. This current Federal position was litigated as part of the Seabrook licensing hearings and was adopted by the NRC Commission is their ruling CLI-90-02. The Draft NY State report misses this current Federal position in its findings.

B. The Indian Point REPP fails to address "shadow evacuation" as required by NRC Guidance Document "State of the Art in Evacuation Time Estimate Studies for Nuclear Power Plants," NUREG/CR-4831.

The question of the "shadow evacuation" impact has been litigated in both the Shoreham and Seabrook licensing hearings. There can be no question that "shadow evacuation" is a real possibility. There is, however, question as to the magnitude of this type of behavior. The petition cites one of the approaches to minimize the impact of such behavior, that is, establishment of traffic and access control around the impacted area. The County plans for the Indian Point Energy Center (IPEC) have provisions for this approach. The second approach involves including the "shadow" in the demand estimates when calculating the ETEs. This approach involves establishing the magnitude of the "shadow" and this is clearly not an exact science. "Shadow Evacuation" is, however, being considered in the preparation of the updated ETE for Indian Point. It should be noted that the ETE study is an NRC requirement on the utility; the offsite planners just include the values in their plans.

C. The ETTE relies upon outdated data that significantly underestimates the population in the Indian Point EPZ.

The 2002 versions of the County plans contain population figures based on the 2000 census. The ETE for Indian Point, as noted above, has been revised.

D. The ETTE fails to address family separation in its analysis of evacuation times.

Expertise is lacking to address the specifics of the method used to develop the ETEs. FEMA has in the past come to the agreement that the NRC would be lead on these issues since the ETE is an NRC requirement that is placed on the utility.

E. The Indian Point REPP relies upon information control and secrecy, and therefore, fails to adequately inform the public in the event of a radiological emergency.

It is true that one of the early actions that might be taken for the school population is a precautionary transfer of the students to an appropriate host facility. It should be noted that this is not an evacuation as generally understood and it does not imply that there is a need to evacuate or shelter the general population. The action is often taken to free up resources that are needed for a general public evacuation if one becomes necessary. The State and local officials have, for a considerable time, resisted the activation of the Alert and Notification system for precautionary actions.

F. The Indian Point REPP fails to meet the requirements for protection of foodstuffs and drinking water in the 50 mile ingestion exposure pathway EPZ.

The current plans assign post plume protective action decisions to the State. In the State plan in Section III.2.6.2 and 2.6.3 options are presented to protect the milk produced

within the impacted area. The most common option is to provide uncontaminated food and water to the cows (put cows on stored food and water). For the vast majority of commercial dairy operations, the cows are on stored food and water as a standard operational protocol. For other agricultural products, one of the options is to embargo food pending evaluation thereby negating any concerns about delayed sample analysis. Procedure M contains sampling procedures for the ingestion pathway. Procedure H specifies assessment techniques for the ingestion pathway and has adopted Federal Guidance with respect to PAGs and their associated Derived Intervention Levels (DILs). The statement is made that the implementation of protective measures will be carried out by the Department of Agriculture and Markets in coordination with the Department of Health. Both of these agencies are represented in the State EOC. The following statement in the petition "There has been no such effort in the Indian Point REPP, which do not indicate which State agencies are to be contacted or how these contamination assessment process will work", is not supported by the simple language of the State plan.

G. The Indian Point REPP fails to address the requirement for administering radioprotective drugs to the general population.

The current version of the State and County plans conformed to the existing Federal policy of the use of KI for the general public when the plans were last revised. The following statements in the petition 'FEMA's suggestion that this legal deficiency with the Indian Point REPP will be addressed prospectively directly contravenes the plain meaning of the law. NUREG 0654 FEMA REP 1 was first published in 1980 and the Indian Point REPP was last approved in 2001. Thus, FEMA acknowledges that the Indian Point REPP does not now, nor has it been in compliance since Indian Point was required to have an emergency plan." fail to consider the change in the Federal position on the use of KI. NUREG-0654 criterion J.10.f references the FDA guidance of KI use and that guidance clearly indicates that the use of KI for the general public is a State decision. The State decided, at the time the last revision of the plan, not to use KI for the general public. A change in the Federal policy and a change in the New York State position on the use of KI as an additional option to sheltering and evacuation has resulted in a need to update the plans to conform to the new State position. In accordance with NRC and FEMA policy, the plan revisions are due one year from the time the KI was delivered to the State. These plan changes are due in the next plan revisions.

H. The Indian Point REPP does not address the possibility of a radiological release from outside the reactor containment building, and therefore, fails to analyze emergency response scenarios that could trigger protective action.

The plan is not restricted to use for releases from the "Reactor Containment Building". The petition states, "The Indian Point REPP assumes that a radiological release would come from the reactor containment building. It explicitly states that such a release "would almost certainly be contained within the reactor containment building." This is not explicitly what the plan says. The correct quote is "The nature of the uranium fuel at the Indian Point Energy Center (IPEC) precludes the possibility of a nuclear explosion (a weapon-type detonation). Other types of accidents are possible, but unlikely. These accidents, should they occur, would almost certainly be contained within the reactor

containment building", (Westchester County Plan, June 2002, p. I-12). There is no basis for assuming that the above statement in a County plan means that the operators of the IPEC plan and procedure do not include other potential release paths. FEMA notes that the NRC or the licensee is best suited to address this issue as it is an onsite issue.

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
A.1.a	The plan identifies the general responsibilities of local, state and Federal governments intended to be part of the overall response organization. General responsibilities are detailed in Section 1. Responsibilities for the phases of Readiness, Response and Intermediate and Late phases are contained in Section II, Section III and Section IV, respectively.	A	Met	This section discusses this information in great detail.
A.1.b	Each of the plan Sections, Introduction, Readiness, Response, and Intermediate and Late phase, detail the concept of operations for State Agencies, local governments, the Nuclear Facility Operator and the Federal Government that pertain to that phase of the emergency. Table 1 in Section II is a matrix of activity responsibilities for various State agencies during the readiness phase. In Section III, pg. III-3, the plan makes reference to a Table 2 which the plan states is a list of response activities assigned to State agencies, local governments, the private sector and the Federal government. **This Table could not be located in the plan. Section III also has two Tables listed as Table 3 (pg. III-30 and pg. III-44). However, neither of these contains the information described in the plan as being contained in Table 2.** **In Sec. IV, para. 2.0, p. IV-2 - The relationship and staffing of the Recovery Committee (appointed by the DPC) and the Recovery Planning Council appointed by the Governor should be described.**	I		

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
A.1.c	Section III (pp 46-47) contains two diagrams showing lines of authority State, local, Federal and NFO under two conditions: Prior to State Declaration of Disaster Emergency, During such a declaration. *An additional diagram attempts to show both authority and communication links; however, the relationships are difficult to distinguish.* **There is no diagram showing the interrelationships for most of the State agencies.**	I		
A.1.d	Section III part 1.3 pp III-1 states that local government has the primary responsibility for responding to a radiological emergency. State agencies are to support local government. Upon a State Declaration of Disaster Emergency by the Governor, the DPC assumes direction and control of emergency response. Section III (pp 46-47) shows two diagrams that illustrate the relationships before and after a Governor's declaration. *The local risk County plans should be reviewed to assure that this change in the lines of authority is documented appropriately.*	*A*		
A.1.e	Section III (p. 5) states that SEMO has communications systems for maintaining contact with EPZ counties, SEMO field offices and the NFO. SEMO staffs the SECC on a 24-hour basis. The communications/Warning procedure (Procedure B) further details the State's communications links.	A	Met	This section also references each respective county's radiological emergency preparedness program protocol.

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
A.2.a	**See comments regarding Table 2 under criterion A.1.b.**	I		
A.2.b	The acts, codes and statutes giving authority to undertake the emergency response actions detailed in the plan are listed in Section I (pp10-12).	A		
A.3	Appendix E of the plan lists 4 LOA/MOU describing agreements with American Red Cross, Niagara Mohawk Power Corp., NYS Power Authority and Rochester Gas and Electric Corp. **However, the agreements themselves are not contained in the plan and were not submitted for review. Note: LOAs/MOAs will need to be updated with change of ownership of the plant(s).**	I	Not Met	The plan refers to Letters of Agreement provided in a separate appendix, as permitted by NUREG-0654. However, because the reviewer was not provided with a copy of the appendix, the content and currency of the LOAs could not be verified
A.4	The plan (Section III, p. III-3) designates the Director of SEMO as having responsibility for ensuring continuity of resources.	A	Met	This capability is referred to as the Resource Continuity Organization in the plan
C.1.a	The plan states (pg. III-3) that the State Commissioner of Health or designee is authorized to request FRMAP assistance. *On Page H-2, the Rad Assessment Staff at the EOC is assigned the responsibility of requesting radiological assistance from the Brookhaven Area Office of DOE; whereas page H-10, Section 6.2.2 indicates that SEMO will request all federal radiological assistance through FEMA. This contradiction/apparent contradiction should be clarified. Procedure H, para. 6.2.2, p. H-10 states*	*A*		

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	that NYSEMO will request all Federal radiological assistance through FEMA, whereas in paragraph 4.2 on page H-3 it indicates that the New York State EOC radiological staff requests Federal radiological assistance through DOE's Brookhaven Area Office.			
C.1.b	Procedure H states that the FRMAC field organization is expected to provide personnel and equipment to coordinate and perform environmental monitoring and assessment. *Appendix A –FRMAC lines 2 & 3; The individual in charge of the FRMAC is now termed the "FRMAC Director", not the Offsite Technical Director. Appendix A, p. 4 Federal Response Center; This facility has been replaced in the Federal Response Plan with the Disaster Field Office (DFO).*	*A*		
C.1.c	The resources available to support Federal response are listed in Appendix D of the plan.	A		
C.2.a	Procedure H states that the State will typically send two representatives to the EOF. One will be a radiological Health Specialist and the other will be a specialist in reactor systems and operation. *Section III, subsection 2.3.3 Activation: It is inappropriate to use the word "may" with respect to the pre-designated County personnel reporting to the NFO EOF.* *P. III-24, Section III,Para 2.3.4; Doesn't the county dispatch a liaison to the EOF at the Alert rather than*	*A*		

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	SAE as stated here?			
C.3	Procedure N names the Wadsworth Center Laboratory of Inorganic and Nuclear Chemistry in Albany as the radiological laboratory used to process environmental samples. The equipment available for analysis is detailed in Appendix G.	A		
C.4	Section III of the plan (Response) and Procedure H (Assessment/Evaluation) detail the facilities and organizations to be relied upon in an emergency. The plan names the NFO, NRC, FEMA, DOE, EPA, HHS, USDA, and various agencies of State and local government. **The plan indicates that Table 2 in Section III (which was missing from the copy of the plan sent for review) details the response activities assigned to State agencies, local governments, the private sector and the Federal government. The very general reference to the Federal Response Plan community may not be sufficient to specifically identify other Federal Departments and their agencies such as DOT (U.S. Coast Guard, Federal Aviation Administration, etc.)** Section III, subsection 1.0 and 2.0. pp. III-2 and III-3: The reference in subsection 1.0 to "Procedure B, Attachment 11A for Federal notification contacts is difficult to find. Sec. III, subsec. 2.4.1, p. III-27: *The first paragraph of this page states that additional state and local radiation surveillance resources will supplement the NFO and Federal Field assessment teams. This appears contradictory to p. III-23 where*	I		

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	the Commissioner of Health will request Federal radiological monitoring and assessment assistance if it is needed.			
D.3	Section III (pg. 20) states that the State plan has adopted the four classes of emergency established by the NRC. Page 49 in Section III lists the levels of activation for State resources at each ECL classification.	A		
D.4	Procedures B (communications/warning),D (State EOC), G (Exposure Control) and H (Assessment) detail actions to be taken at each ECL by applicable State agencies.	A		
E.1	Section III item 2.3.2 describes the process for notification of response agencies. The plan specifies the items that will be included in the notification message from the NFO. Once notified, the SECC will ensure that the notification message is received by State DOH and SEMO according to the Communication/Warning Procedure B. Procedure B provides a detailed description, for each ECL, on how notification is to take place. Separate procedures are included for incidents that occur during and after business hours. There are some problems with the references made in Procedure B to attachments to the procedure. *P. B-1, Section 2.0 ,2nd Para,- The initial information transmittal form, Part 1, is Attachment 7, not Attachment 8 as stated. NOTE: The same comment relative to Attachment 7 rather than 8 also applies to: P. B-2, Section 3.1; P.*	I		

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	B-2, Section 3.2; P. B-3, Sections 4.0 and 4.2; P. B-4, Sections 5.0 and 5.2; P. B-5, Section 6.2; and P. B-6. Procedure B, Att 1, p.2, I.A, Step 2 - Attachment 7 rather than 8 should be cited. (See also p.3, Step I.A, Step 6.b; p.3, Step I.B.2; p.4, Step I.C.2; p.4, step I.D.2; p.6, Step II.A.2; p.6 Step II.A.6.b; Step II.B.2; p.7, Step II. C.2; p.8, Step II. D.2; p.9, Step III.A.2; p.10, Step III.A.6.b; p.11, Step III.B.2; p.11, Step III, C.2; p.11, Step III.D.2). **For example: 1) In several places the procedure makes reference to Attachment 6 as a list of SEMO field staff. Attachment 6 as contained in the copy of the plan reviewed is a statement about supplemental monitoring of transients at state parks; 2) reference is made in item 5.8 to Attach. 11 as a list of appropriate ingestion EPZ counties. The correct reference should be to Attach. 12. Attach. 12 is titled Ingestion EPZ Counties Warning Points, although it also includes the contiguous states and the province of Ontario that are in the ingestion EPZs of one or more nuclear plants; 3) several references are made to an Attachment 13. This attachment does not exist in this version of the plan (a more thorough discussion of problems with this procedure is contained in the comments for H.4).** **Procedure B should be completely revised since much of it is out of date and many attachments are missing or are inaccurate. In Procedure B, Attachment 7, p.1, Part I of this form has been updated since this New York State Plan was**			

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	submitted for review. In paragraph 4, B-3, DOH/DPS must do more that receive a telephone call and be read Part I of the Notification Form. They need to contact the NFO to obtain a current assessment of the situation and a prognosis of the event in progress, such that DOH/DPS can assist NYSEMO and the Counties in assessing the appropriate response.			
E.2	Section III, item 2.3.3 and Procedures B and D describe the concept of operations for alerting and mobilizing staff. In general, at an ALERT ECL, SEMO will notify pre-designated State agency personnel to report to their respective response facilities. At the SAE or higher ECL full activation of facilities will occur. **See comments regarding Procedure B under criterion E.1. It is FEMA's understanding that for Indian Point at least, the State has agreed to full activation at the ALERT ECL.** *P. B-1, Section 2.1 - The NFO notifies the NY SECC rather than the NYWP, as indicated, since the emergency communication point was redesignated in Section 2.0 above. P. B-3, Section 3.5 - This should refer to Attachment 8 rather than Attachment 9. (See also P. B-4, Section 4.9). P. B-3, Section 4.6 - The first line discusses placing DOH staff on standby for possible EOC at the Alert. Weren't the plans to be changed to require activation at the Alert? P. B-4, Section 4.8 - Attachment 13 cited here is not in plan. (See also P. B-5, Section 5.8; and P. B-6, Section*	I	Met	These procedures are well established in the plan.

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	6.8). P. B-5, Section 5.6 - Attachment 10 should be cited rather than Attachment 11. (See also P. B-6, Section 6.6). P. B-5, Section 5.8 - Attachment 12 rather than Section 11 should be cited. Procedure B, Att 1, p.4, Step I.C.6 - Attachment 10 rather than Attachment 11 should be cited. (See also p.18, Step 11.C.6; p.11 , Step III.C.7). *Procedure B, Att 3A, p.1 - What happened to the RECS drop at NYSDOH that was previously shown (Rev. 3/99)? Procedure B, Att 3B, p.1 - Why is NYS EOC no longer indicated as in rev. 3/99? Procedure B, Att 3C, p.1 - Why are both NYS EOC and NYS DOH removed versus Rev. 3/99?* *Procedure B, Attachment 4, p.1 – How do the PSD personnel, who serve as engineering specialists, get notified?*			
E.5	Section III item 2.1.3 describes public notification. The plan states that the capability exists to provide prompt notification to the public, followed by dissemination of information on protective action decisions within 15 minutes of such a decision. Activation and control of the public notification system is to be implemented at the local level in coordination with the State Disaster Preparedness Commission. The SEMO will verify that public notification systems are activated, including the coordinated use of the EAS. The concept of operations for the EAS is further described in Attachment 1 to Procedure C, Public Information.	I		

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	P. III-36, Section III, Para 2.5.1, Sheltering, last para - Turning off air conditioners in severe heat conditions could result in acute health effects due to heat stress. The language should focus on minimizing air exchange with the outside, but not at a cost of health due to severe heat or cold. *P. B-5, Section 5.9 - EBS should be EAS. (See also P. B-6, Section 6.9).* **Procedure B, Attachment 10 needs to be redone; punctuation is missing making the attachment unusable. Attachment 11 also needs to be revised. Attachment 10, p.2 – the message at the bottom of page 2 is missing necessary punctuation/parentheses to make it read correctly. Same comment applies to the Messages on page 5.**			
E.6	See comments under criterion E.5.	I		
E.7	Attachment 1 to Procedure C contains the concept of operations and generic procedures for EAS message preparation. This begins when County and State officials advise their PIOs on a mutually agreed course of action (protective action decision). The PIOs will develop the appropriate message and transmit it to the activating PIO (lead County). Timing of siren activation is coordinated and the sirens are to sound prior to airing of the EAS message.	I	Met	This section also refers to the site Joint News Center (JNC) procedures.

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	The specific procedures used by the State PIOs for their role in this process were not submitted for review.			
F.1.a	Section III, p. III-5 and Procedure B indicate that the SECC is the warning point for notification from the NFO. This facility is staffed 24-hours per day. The primary communications system is dedicated telephone (RECS system). Back-ups systems include commercial telephone and radio systems. Procedure B -Communications/Warning describes the process to be followed in notifying response agencies and mobilizing staff for each ECL level. *P. B-1 Section 2.0 1st Para - Attachment 6 is NOT a notification list as indicated. Attachment 6 is a procedure for supplemental monitoring for park transients. (See also p. 8-3, first line –this should refer to Attachment 5 rather than 6) p. B-3, Section 4.4*	*A*	Met	This section also refers to the Nuclear Facility Operator (NFO) Site Emergency Plan.
F.1.b	Procedure B instructs the SECC Operator to notify Federal Agencies and contiguous states of an ALERT (item 4.7), SAE (item 5.7) and GE (6.7) ECL. *P. B-4, Section 4.7 - To notify contiguous states as well as federal agencies, Attachment 10 should be listed along with Attachment 11. (See also P. B-5, Section 5.7; and P. B-6, Section 6.7)*	*A*		

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F.1.c	See comments for F.1.b. Attachment 11 to Procedure B lists the telephone numbers of the various Federal agencies that may be called upon for radiological emergency information or support. **Procedure B, Attachment 11, Specialized Contact List: Some of the numbers are outdated. The new numbers for EPA are for Region II: 212-637-4013 and (24-hour) 732-548-8700. National Response Center: 800-424-8802. NRC Operations Center: 301-816-5100 with 301-951-0550 as the back-up number. The DOE- Brookhaven Area Office number should be 631-344-2200. The other numbers should also be verified. In section III, C, P. III-48, the lines of communication between New York State and the Nuclear Regulatory Commission are not in accordance with reality. Lines of communication between NRC and NYSEMO, and between NRC and NYDOH are missing.** *For state level purposes, consider a single entry for paragraph F, page 1 of Attachment 11 to Procedure B as below:* *"F United States Department of Transportation Regional Emergency Transportation Rep (24 hr emerg) 617-223-8555*	I		
F.1.d	Procedure H (p. H-3) indicates that the Radiological Assessment Team, located in the State EOC is to establish contact with the NFO to obtain updated	*A*		

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	information periodically. This procedure also indicates (subsection 4.5.1, item 1) that data collected by field monitoring teams will be transmitted to their respective EOC. *A mechanism needs to be included for obtaining additional information upon receipt of the initial Part 1 of the report.*			
F.1.e	Section III, subsection 2.3.3 (p. 23) states that at the ALERT or higher ECL, SEMO will notify pre-designated State agency personnel to report to the State EOC. Procedure B, (Communications and Warning) describes the process alerting and activating personnel who will report to the State EOC, the EOF, or to the field. *Part 4.0 Response Action - Alert (p. B-3) of this procedure contains an apparent inconsistency. The last sentence in the first paragraph states that "DOH will send representatives to the State EOC". However, item 4.6 on the same page says in part: " The SECC operator will notify the State DOH staff to be placed on standby ...or to report to the EOC....". This statement should be clarified to indicate if some DOH personnel will be directed to the EOC, while others are placed on standby. Also see comments regarding Procedure B under criterion E.1.*	*A*		
F.2	Page III-6 of the plan states that the Department of Health Emergency Medical Services Program can establish contact with local EMS personnel through mobile radio units.	A		

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F.3	Attachment 2 to Procedure B contains the procedure for testing the RECS system. The procedure indicates that the system is tested weekly, and that unannounced tests will be conducted as necessary.	A		
G.1	Section II subsection 3.5.1 of the plan indicates that the SEMO will assist local governments in the design and implementation of their public education programs. At the State level, Procedure C (Public Information) indicates that the State PIO shall develop and implement programs to raise public consciousness of radiological emergency preparedness. Activities may include briefings for reporters, development and dissemination of brochures and news releases, participation in town meetings and other activities. Information of this type is to be disseminated at least annually. Procedure E (Public Education) states that the SEMO will direct a statewide public education task force to assist in the development of statewide radiological emergency preparedness public education materials and to implement other program goals. Brochures have been developed cooperatively by state and county governments and by the NFOs for dissemination to the public living in the 10-mile EPZs of commercial nuclear power plants in the State. Procedure C, Attachment 5 lists the items to be included in this brochure.	A	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers to the county radiological emergency preparedness program plans on this issue.
G.2	See Comments under G.1	A	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers to the county radiological emergency preparedness program plans on

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				this issue.
G.3.a	Procedure C, section 3.1 states that each nuclear power plant site has a near-site News Center. Attachment 2 to the procedure lists the locations of these news centers and provides general procedures for operation of the Joint News Center.	A	Met	The State plan contains sufficient detail to meet the requirement. This section. also refers to the Joint News Center (JNC) procedures.
G.4.a	Section III, subsection 2.1.7 indicates that the State PIO has been designated as the single source of information on State response activities and recommended public protective measures.	A	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers to the county radiological emergency preparedness program plans on this issue. *(This comment was provided for G.4a-G.4c)*
G.4.b	The Public Information Procedure C states that the State PIO shall coordinate information release with County and utility PIOs.	A	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers to the county radiological emergency preparedness program plans on this issue. *(This comment was provided for G.4a-G.4c)*
G.4.c	Procedure C states that the State PIO, in conjunction with county and utility PIOs, will maintain a rumor control system. This system is to include media monitoring and response to misinformation or rumors circulating through the public. Attachment 4 to Procedure C contains generic procedures for rumor control center operations.	A	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers to the county radiological emergency preparedness program plans on this issue. *(This comment was provided for G.4a-G.4c)*
G.5	Attachment 5 to Procedure C (Public Information) states that a joint media briefing shall be conducted annually at the applicable JNC for each power plant site. The topics included in this briefing include information about nuclear power, information to enhance media understanding of emergency plans and the operation of the JNC.	A		

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H.3	Section III, subsection 2.2.1 of the plan states that the State EOC is located on the State Campus in Albany. The State will direct and control emergency operations from this location. Procedure D (State EOC) provides instruction to the pre-assigned staff concerning their activation to the EOC and initial actions to be taken upon arrival.	A	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers to the county radiological emergency preparedness program plans on this issue.
H.4	Procedure B (Communications/Warning) lists the procedure to be followed by the SECC Operator to activate staff for the State EOC. Due to problems noted below, it cannot be certain that this procedure as presented can be used to activate and staff the EOC in a timely manner. **In several places in the procedure (e.g., item 3.2, 3.4, 5.5...) the SECC Operator is directed to use Attachment 5 to Procedure B to notify specifically-titled individuals in the SEMO organization, such as the Director or designated alternate and the SEMO Chief of Operations. Attachment 5, titled New York State Emergency Management Office, lists four individuals, all without title.** In several places in the procedure (e.g. item 5.4, 6.4) the SECC Operator is directed to notify the Supervisor, SEMO Assistant Deputy Director for Operations Communications and Warning, who will in turn notify the SEMO Supervisor of Warning and Staff, using Attachment 10. *This Attachment, titled State Notification and Activation List, does not name any of the individuals specified above.* Attachment 9, titled SEMO Communications and Warning Section, appears to be the intended reference. However, the	I		The State plan contains sufficient detail to meet the requirement. The State plan also refers to the county radiological emergency preparedness program plans on this issue.

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	titles are slightly different. For example, this Attachment lists a Director of Communications and Warning, but not a Supervisor of Communications and Warning as specified in the procedure. *In items 5.9 and 6.9 of the procedure, the SECC Operator is directed to advise the appropriate EPZ Counties to activate their public notification system, using Attachment 12. Attachment 12 is titled Ingestion EPZ Counties Warning Points. Although it also includes the EPZ counties, it is not readily discernable from the list which counties these are. The Attachment also includes contiguous states and the Province of Ontario. Therefore, it is inappropriately titled. In items 5.6 and 6.6 of the procedure, the SECC Operator is directed to notify State Agency Staff to activate and staff the State EOC. This Attachment contains only Federal contacts. Attachment 10, titled State Notification and Activation List, indicates which agencies are to be placed on standby or activated to the EOC for each ECL level. Presumably, this list would be used to contact agency representatives who would then contact further agency staff. It is also presumed that actual contact numbers are controlled, and not contained in the list for general distribution. However, it is not clear that this list would contain names of agency contacts and their telephone numbers (i.e. there is no space indicated for this information). Also, on page 1 of this Attachment, the acronym WPO is used without definition. It does not appear on the list of acronyms in Appendix B of the plan. There are several other inconsistencies and incorrect*			

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	references to Attachments, as well as a missing Attachment 13 referenced in item 5.8. The procedure needs to be thoroughly reviewed and revised before it can be used as intended. **Procedure B needs to include the new plan change to notify the municipalities at the Alert ECL and for the State and counties to fully activate at the Alert. Also, see comments regarding Procedure B under criterion E.1.**			
H.7	Appendix G to the plan lists the radiological monitoring equipment available to the State of New York. The Bureau of Radiation Control maintains emergency kits for the Syracuse, Buffalo, White Plains and Albany Regions. The kits contain a PRM-6 Pulse Rate Meter and five probes to be used with this instrument. The plan notes that there is also an emergency kit for the Rochester Region, but that it is incomplete in that it has the PRM-6 but only two of the five probes available in the other kits. The plan lists a variety of additional instrumentation (apparently included with all kits). The Appendix also lists radiological instrumentation equipment used for ingestion pathway monitoring that is stored and maintained by the SEMO.	A	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers to the county radiological emergency preparedness program plans on this issue.
H.10	Procedure G, Attachment 5 describes the process for maintaining personnel dosimetry equipment. A criterion for determining that a dosimeter is defective is included. Dosimeters found to be defective are to be returned to SEMO for repair or replacement. Dosimeters are to be checked for drift annually and	A		

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	re-zeroed quarterly. Appendix G to the plan states that equipment held by the Department of Health is inspected, inventoried and operationally checked at least once each quarter, or after use by DOH personnel. The Appendix states that equipment is maintained and calibrated according to manufacturer's specifications.			
H.11	Appendix G to the plan lists the protective equipment (dosimetry) on p. 13; radiological monitoring equipment on pp. 8, 9, 13, 14; and laboratory equipment for radiological analysis of field samples pp. 4-5. **Although a general discussion of communications systems is contained on p. III-5and III-6 of the plan, no comprehensive list of communications equipment could be located in the plan or procedures.**	I		
H.12	Procedure H to the plan states that data collected by NFO and County field monitoring teams (these organizations have primary responsibility for radiation measurements during the plume phase) will be transmitted to their respective EOCs or TSC per these organizations' procedures prior to activation of the EOF. After the EOF is activated, data collected by NFO teams is sent to the EOF and county team data to their respective EOCs. Procedure K, radiological ingestion exposure, states that the State Department of Health will collect samples of water, soil and vegetation; the Department of Agriculture and Markets will collect milk samples. The Department of Environmental Conservation will	A		

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	collect samples of flora and fauna. The division of State Police and the Department of Transportation will provide resources for transporting samples collected to the appropriate laboratory for analysis.			
I.7	Section III, page III-27 the state plan states that "Additional radiation surveillance resources of the State and local agencies will supplement the NRFO and Federal field assessment teams and will be made available for assistance in determining and verifying off-site consequences". Procedure M addresses ingestion sampling team procedures, and Procedure N addresses nuclear emergency laboratory procedures. *The plan should indicate that the initial resources would be provided by the risk Counties and the NFO. State and Federal resources will supplement the initial response.*	*A*		
I.8	Primary responsibility for this activity is assigned to the local risk Counties. Appendix G, on pages 4 and 5, 9 and 10, and 13 and 14, provides summaries of radiological instruments for field use by State supplemental monitors.	A	Met	The State Plan assigns this requirement to the respective county radiological emergency preparedness program.
I.9	The New York State Plan in Appendix H page 7 with respect to I.9 states "This criteria is assigned to the respective risk County REPP". *The state plan does address air sampling in Procedure M, where it is included in ingestion sampling team procedures. While some air sampling may be appropriate to be conducted by ingestion sampling teams (that is, for the case of resuspended materials), these teams would generally be dispatched to conduct sampling*	*A*		The State Plan assigns this requirement to the respective county radiological emergency preparedness program.

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	only after the initial plume has dissipated. An air sampling procedure should therefore also be made available separately to any State teams dispatched during the plume phase of the event. On page M-3 of Procedure M, the equipment listing refers to only a single filter and charcoal canister and associated materials – this should be corrected to provide for multiple filters and multiple absorptive cartridges for radioiodines, so as to permit the field team to obtain multiple air samples beyond a background air sample. Also, silver zeolite cartridges would be preferable to charcoal cartridges (silver zeolite cartridges cost more but they are not as sensitive to xenon and radon as charcoal cartridges, and that would be an important consideration in order to avoid overestimating the amount of radioiodines present in a gaseous release). Charcoal canisters are also referred to on page M-1 of Procedure M. In addition, Procedure N (Nuclear Emergency Procedures) also refers to use of charcoal cartridges (e.g. in Section 7.8, page 25); the above comments apply here also. Procedure M refers to the use of chain-of-custody forms for air samples; it is suggested that a copy of this form be included in the procedure. Also, the NY State Plan Appendix H on page 7 in reference to I.9 refers to "Capability to Detect Airborne Radioiodine Concentration as Low as 5XE-08 uCi/cc". It may be noted that this is a factor of 2 more sensitive than required by NUREG-0654 and that is fine, but is this lower threshold intentional and has it been shown to be valid for the instrumentation to be used and is it incorporated into			

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	air sampling procedures not available for review...			
I.10	Appendix H of the State Plan indicates that this is addressed in Procedure H, Attachment 1. This attachment should be thoroughly reviewed and corrected as needed. No quality assurance appears to have been conducted on Procedure H, as it should have been. Below are some notes on observed errors. On page H-3, Procedure H states, "When activated, the EOF becomes the center where data from the NFO, Federal and State agencies is coordinated and accident assessment is carried out". Accident assessment is carried out at the SEOC and in risk County EOCs in addition the accident assessment performed by the NFO in the EOF. Procedure H should be modified to bring it into line with current practice, clearly indicating where accident assessment is actually to occur. *On page H-18 there are several typos, including what appear to be inadvertent replacements of"" (apostrophes) by "?"(box).* *Procedure H Attachment 1 on Page 1 states that "State dose assessment will utilize the applicable utility dose assessment methodology (computerized and manual; see Attachment 7. Verification of dose projections will be derived utilizing NRC and EPA methodologies." During the Indian Point 3 exercise*	I		

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	in November 2000, the NRC code RASCAL was the primary code used by state dose assessment at the SEOC; it is suggested that the procedures be modified to conform to practice or vice-versa. **Procedure H Attachment 1 on page 1 has an error in the expression for the cloud travel time, which would be given correctly by (x/u)/3600.** *Procedure H Attachment 1 on page 2 there is a need to clean up both nomenclature and printing errors. The second equation, which is for committed effective dose equivalent, corresponds to the total 50 year dose and it would be preferable to the symbol on the left hand side of the equation to be subscripted with,50 in order to distinguish it symbolically from the effective dose equivalent.* *Procedure H Attachment 1 on page 5 in Section 1.4.1 there is a typo, a colon has been left in the equation and a μ has been inserted since the previous version of the plan. There is some doubt if a 1 μCi release will result in any dose at 1 mile.* *Procedure H Attachment 1, page 6: In the last sentence, the unit is garbled (it should be microcuries per square meter). On page 7, change "overall" to "over all".* *In Procedure H, Attachment 1, page 12 (section 3.1.1), item c should be "annual ingestion rate" or "amount of food ingested per year".* **Furthermore,**			

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	the second unit in item c is dimensionally incorrect; instead, the unit liters/year would be appropriate for ingestion of liquid beverages (this same error occurs on page 13). **In Procedure H, Attachment 2, page 1, two units require correction as a colon appears instead of a multiplicative prefix (the units should be microcuries per kilogram and rem per microcurie respectively). A similar error appears in the DIL unit in the table in Attachment 2, page 2: it should be microcuries per kilogram.** *In Procedure H, Attachment 6, page 1 in the "Contact List for Initiating Sampling Procedures," both the "Title" and "Telephone Number" columns are blank. It is suggested that at least the title of the responsible individual be included, and preferably, the business telephone number and name of the individual.* *In Procedure H, Attachment 7, page 1, some extraneous letters appear in the table under "Ginna".* *Procedure H, Attachment 1. The source tables that should be used in a given formula should be referenced.* *The copy of Reg. Guide 8.1.3 that is listed as an attachment to Procedure G has been revised (in 1999) to Version 3. Please update the reference.*			

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	Appendix A, p. 7, "Radioiodines" should include iodide 132 as well (as both a fission and a decay product). **Procedure H, page H-3, 9th diamond, identifies one of the most important assessment functions performed by the State Department of Health, which is to calculate the ratio of the total effective dose equivalent (TEDE) to the dosimeter reading and provide the multiplication factor to State and local staff as appropriate. The State REP Plan does not contain the calculation method to implement this function. (See Criterion K.3.b.)** *P. 8, Appendix A, TEDE - TEDE is the sum of EDE and CEDE; not EDE and CDE.* *Procedure H, Att 1, p. 9, Section 2.2.2 - The assumption is made that the ratio of total iodine to 1-131 is 4.4. This ratio may be representative of the radioiodines in the core, but is not necessarily representative of the radioiodines in a release. The ratio will change depending on core conditions and the release mechanism. The shorter-lived nuclides will decay in the process of migration through the fuel matrix, level, cooling system, other removal mechanisms and finally release. This changes the ratio. (See also Section 2.3.2).*			
I.11	Appendix H of the plan indicates that arrangements to locate and track the airborne radioactive plume	I		

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	using either or both Federal and State resources are addressed in Procedure H. **Procedure H addresses assessment-evaluation, and there appears to be no discussion of arrangements by the State to actually locate and track the airborne plume; only actions by NFO and county field monitoring teams are discussed (e.g., on page H-4). However, Procedure H does indicate that the State EOC will request Federal radiological assistance. See also comments on Procedure H under criterion I.10.**			
J.2	The provision of evacuation routes for onsite personnel is the responsibility of the NFO and risk counties. With respect to provisions for evacuation routes and transportation for onsite individuals, the New York State Plan in Appendix H page 7 states, "Refer to NFO and County Emergency Plan". It also references Sect. III, page 11, which provides brief information about evacuation in general, indicating assistance available from state agencies, such as SEMO, the Division of State Police, and the Department of Transportation.	A	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers to the Nuclear Facility Operator (NFO) and County emergency plan on this issue.
J.9	The plan states (Section III, 2.4.2) that protective response options recommended for implementation are determined on the basis of PAGs, and applicable environmental, logistical and meteorological conditions. In the plume exposure phase, the plan adopts PAGs developed by the U.S. EPA for determining appropriate response (sheltering or evacuation). For the Ingestion Exposure Pathway	I		

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	phase, the plan adopts PAGs developed by the U.S. FDA. Protective response options include the isolation of agricultural products determined to exceed the established PAGs. For estimating the risk associated with deposited radioactive materials, the plan adopts PAGs developed by the U.S. EPA. Response options may include the relocation of the public in affected areas to areas of lesser radiological exposure and other dose reduction techniques. The process for making protective action recommendations using these PAGs is contained in Procedure H. Section III, Decision Process, p. III-33: Clarify if Procedure H is the one in Appendix I. Also, is there a particular part of Procedure H that addresses the "Decision Process system?" Procedure H is 25 pages with almost an equal number of pages for the Attachments 1-7. Section III, Sheltering, p. III-35: Do you intend to "minimize" or "reduce" radioactive exposure to particular groups? Procedure H, Attachment 3, PAGs for the Early Phase: Under the column, "Comments" add a closing parenthesis after "sheltering". **The New York Plan has adopted the new August 1998 FDA PAG guidance in the assessment portion or the plan (Procedures H & K), but there**			

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	has been a failure to completely revise the plan to reflect the new FDA PAG guidance in the response portion section of the plan. Section III of the plan still refers to two levels of PAGs, preventive and emergency and uses the old preventive and emergency PAG dose limits. The following locations were noted: Page III-38, Section III. 2.6.2, The Milk Pathway, 1st ; Page III-39, Section III. 2.6.3, Other Agricultural Products, 2nd; Page III-40, Section III. 2.6.3, Other Agricultural Products, 3rd; Page III-40, Section III.2.6.4, Water Sources, 1st and last; Page III-41, Section III. 2.6.4, Water Sources, 1st. Procedure K, Page K-3, bottom of page, last two diamonds, These statements refer to preventive and emergency protective actions. Do these protective actions apply to the old PAGs or the new PAGs? Also, the last word on the page is "disposition", in the context that it is used, the meaning is unclear. More explanation is necessary. Procedure L, Page L-3, Section 3.5.1 makes reference to "preventative or emergency response levels". With the new PAGs, the appropriate terminology is now "derived intervention levels". *P. I-5, Section I, Para. 3.3 - PAGs are levels of dose saved by taking the a protective action versus not taking the protective action. If the one rem cannot be saved by taking the action, the PAG would indicate that the action may not be prudent. P. III-29, Section III, end of Para 2.4.2 - Protective actions are*			

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	justified when the projected dose savings due to taking the protective action versus not taking the action equal or exceed the PAG level of dose. Protective actions need be based on dose savings, not merely on dose projections. *P. III-38, Section III, Para 2.6, Top of page - The ingestion pathway sentence refers to the 1982 FDA PAGs rather than the "new" FDA PAGs discussed in Para 2.4.2.* *Procedure H, p.H-20, Section 8.2.1 - At a Site Area Emergency, consideration should be given to place milk animals on stored feed and water at least out to 5 miles, if not to 10 miles. In the event of a GE, there should be no conflict in instructions to the public as to whether to evacuate or the care of the animals. The animals should be either have been taken care of before the GE, or if not, clearly a secondary consideration to people and their protective actions. (See also p. H-23, Section 9.3, item 4 and p. H-24, Section 9.4, item 4.)*			
J.10.a	The New York State Plan in Appendix H page 8 with respect to J.10.a only states "Refer to each respective County REPP", and provides no references to the State Plan. *Cross Reference should indicate respective County Plans.*	A	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers heavily to the county radiological emergency preparedness program plans on this issue. (*This comment was provided for J.10.a-J.10.c)*
J.10.b	The New York State Plan in Appendix H page 8 with respect to J.10.b only states "Refer to each respective	A	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers heavily to the

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	County REPP", and provides no references to the State Plan. *Cross Reference should indicate respective County plans.*			county radiological emergency preparedness program plans on this issue. (*This comment was provided for J.10.a-J.10.c)*
J.10.c	The primary means of notifying the EPZ population of a nuclear power plant emergency is the EAS system. Procedures for activating the system are contained in Procedure C- Public Information. The activation and control of the EAS system is implemented at the local level in coordination with the State Disaster Preparedness Commission. The lead county will access EAS in accordance with locally developed plans.	A	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers heavily to the county radiological emergency preparedness program plans on this issue. (*This comment was provided for J.10.a-J.10.c)*
J.10.d	Appendix H of the State Plan indicates that means for protecting persons whose mobility may be impaired due to institutional or other confinement are addressed in Section III page 34 and in Procedure E page 2. *Neither of these directed references to the State plan and procedures significantly addresses this topic. It is suggested that the state plan deal with this topic in more detail, at the very least in regard to State facilities that may be impacted, such as state prisons (e.g., Ossining Correctional Facility), state hospitals, or other state facilities (e.g., Camp Smith).* Appendix H also directs the user to refer to each respective County REPP.	*A*	Met	The State plan refers to the county radiological emergency preparedness program plans and respective site evacuation travel time estimates. (*This comment was provided for J.10.d-J.10.l)*
J.10.e	**The "New York State Special Facility Potassium Iodide Inventory" (Attachment 7 to Procedure G) lists 4 facilities and agencies but does not provide any explicit numerical inventory information as**	I	Met	The State plan refers to the county radiological emergency preparedness program plans and respective site evacuation travel time estimates. (*This comment was provided for J.10.d-J.10.l)*

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	to the amount of KI stored at these facilities; - this should be modified so as to present explicit figures as the amount of KI stored at each special facility. *In addition, information should be provided with respect to quantities, storage, and means of distribution of KI for state emergency workers. It is suggested that the statement regarding authorized use of KI by Emergency Workers in Procedure G, section 6.5, page G-10 be modified for clarity by inserting the phrase "per day" so that it will read, "When authorized by Commissioner NYS Department of Health, Emergency Workers are authorized to take one KI tablet per day for 10 days to reduce effects of radioactive iodine".*			
J.10.f	Attachment 3 to Procedure H-Assessment/Evaluation- states that administration of stable iodine to emergency workers will be made upon approval of state medical officials when committed dose to the thyroid is projected to be 25 Rem. The procedure for calculating thyroid dose is contained in Attachment 1 to Procedure H. The plan states that the State does not recommend KI administration to the general public. *Appendix H indicates on page 8 that J.10.f is addressed on pages 8 and 9 of Procedure G; that is not the case, and this minor error in the plan should be corrected.* Appendix G, section 6.5, page G-10 indicates that, when authorized by the Commissioner of the New York State Department of Health, the emergency worker is to take one KI tablet for 10 days to reduce the effects of radioactive iodine (see comment on	*A*	Met	The State plan refers to the county radiological emergency preparedness program plans and respective site evacuation travel time estimates. (*This comment was provided for J.10.d-J.10.l)*

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	J.10.e). *It would be helpful for the State plan to include more information addressing the routing of this authorization within the chain of command between the State Health Commissioner and the individual emergency worker.*			
J.10.g	Section III, subsection 2.1.8 of the plan states that relocation (evacuation) procedures are covered in each County Radiological Emergency Preparedness Plan. Evacuation plans are activated at the local level per these County plans. In the same section, the plan specifies the assistance to local governments provided by the following agencies: SEMO, The Division of State Police, Department of Transportation, The Division of Military and Naval Affairs, The Department of Social Services, and the Department of Corrections. **The procedures that would be used by these agencies to implement responsibilities assigned to them in this section are not included in the plan.**	I	Met	The State plan refers to the county radiological emergency preparedness program plans and respective site evacuation travel time estimates. (*This comment was provided for J.10.d-J.10.l)*
J.10.h	Section III, subsection 2.1.9 of the plan states that local agencies and the American Red Cross share primary responsibility for the registration and monitoring of evacuees at Reception Centers and for the feeding and housing them at Congregate Care Facilities. In the same section, the plan specifies the assistance to local governments provided by the following agencies: SEMO (coordinate State assistance for monitoring of evacuating personnel, if requested by local government); Department of Social Services (if requested, assist in the registration	A	Met	The State plan refers to the county radiological emergency preparedness program plans and respective site evacuation travel time estimates. (*This comment was provided for J.10.d-J.10.l)*

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	of evacuees and coordinate activities of the Red Cross and other recognized organizations).			
J.10.i	According to the plan, the details of projected traffic capacities of evacuation routes under emergency conditions are contained in the analyses of evacuation time estimates for each respective site. These were not submitted as part of this review. *Cross Reference should show reference to respective EVACUATION TRAVEL TIME ESTIMATES.*	*A*	Met	The State plan refers to the county radiological emergency preparedness program plans and respective site evacuation travel time estimates. (*This comment was provided for J.10.d-J.10.l)*
J.10.j	The plan states in Section III, subsection 2.1.12 that public security measures will be implemented at the local level and be supplemented by the State. The Division of State Police is the lead agency for this assistance. Duties assigned to this agency include establishing ingress and egress control, maintaining traffic and crowd control, coordination of support activities with Federal, other State and local government efforts, and other specified duties.	A	Met	The State plan refers to the county radiological emergency preparedness program plans and respective site evacuation travel time estimates. (*This comment was provided for J.10.d-J.10.l)*
J.10.k	The plan states in Section III, subsection 2.1.8 that the Department of Transportation will assist local authorities in keeping evacuation routes clear.	A	Met	The State plan refers to the county radiological emergency preparedness program plans and respective site evacuation travel time estimates. (*This comment was provided for J.10.d-J.10.l)*
J.10.l	Information on evacuation time estimates are contained in separate documents for each site and were not part of this review. *Cross Reference should indicate respective County plans.*	*A*	Met	The State plan refers to the county radiological emergency preparedness program plans and respective site evacuation travel time estimates. (*This comment was provided for J.10.d-J.10.l)*
J.10.m	The plan states in Section III, subsection 2.1.5 that the Department of Health (DOH) has been assigned	I		

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	lead responsibility for the evaluation of data and provision of guidance to local and State authorities as to appropriate protective actions. The plan states that the recommended protective actions for the plume phase will be based on the protective action guides developed by the U.S. Environmental Protection Agency, time required to implement a given protective action, current status of road and meteorological conditions and site prognosis. Further details on the basis for choice of a given protective action are contained in Procedure H-Assessment/Evaluation-, Section 8 and Attachment 1. **Appendix H of the state plan also directs the user to Procedure J, but no Procedure J was present in the copy of the plan provided for review. (In Appendix I, the index to the Procedures, Procedure J is identified as "Radiological Ingestion Exposure," but the "Radiological Ingestion Exposure" procedure is in fact labeled Procedure K, and no Procedure J is present.)**			
J.11	The New York State Plan notes in Section III page 31 concerning ingestion exposure pathway PAGs that "These current recommendations replace the Preventive and Emergency PAGs with one set of PAGs for the ingestion pathway," **the body of the plan has not been updated, and continues to refer to Preventative PAGs (e.g. on Page III-38) and Emergency PAGs (e.g. on Page III-39.). The plan should be fully updated throughout.** The use of the most recent (1998) FDA PAGs is addressed in	I		

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	Procedure H (e.g. in Section 7.1.2, page H-18) and also in Procedures K (in Attachment 3, Table 2) and Procedure N (e.g. in Section 9.5, page 33). **The DILs shown in Procedure N, page 33 are in error by a factor of a million.** Procedure M (Ingestion Sampling Team Procedures) requires chain of custody forms for samples; *it is suggested that copies of such forms be included in the Procedure.* **Several of the individual procedures in Procedure M specify obtaining a sample of a particular weight (e.g. 5 lbs., p. M-14); however, no equipment for weighing samples is specified in any of the equipment lists in Procedure M.** *Procedure M page M-1 indicates survey instruments provided are a microR meter and a GM meter with pancake probe; but the procedure on page M-10 calls for open and closed window readings suggestive of the use of a GM survey meter with cylindrical 'stick' or 'hot dog' probe with rotating shield.* **Procedure M refers to obtaining 'area dose rate' in various types of sampling, but appears to be somewhat inconsistent as to what measurements are meant by this: for air sampling: "(none)"; for soil sampling "determine both 1 meter and ground dose rates"; for surface water "dose rate in sampling area (ground)"; for snow "dose measurements at 1 meter and 2 cm.", as well as "area dose rate @ 1 m. and Open**			

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	Window (OW)/Closed Window (CW)"; for milk "Area dose rate @1 – meter"; for produce "dose rate in area sampled"; for vegetation, "area dose rate @ 1 meter". What specific measurement(s) would be desirable for 'area dose rate' information should be reexamined and presented more specifically and uniformly; in general, a gamma exposure rate measurement at a height of 1 meter above ground level would probably be suitable. *The plan does not appear to include any information in regard to how decisions would be made as to disposition of what might be a large number of ingestion pathway samples of different types (and tracking to which laboratories samples are sent); it would be desirable to have at least an outline of a systematic approach to this topic included in the plan or procedures.* The description of laboratory operations at the Laboratory of Inorganic and Nuclear Chemistry at the Wadsworth Center of the New York State Department of Health as given in Procedure N gives the impression that some emergency operations would be rather ad hoc (e.g. the use of the lunchroom or stockroom for accession (recording in the order of acquisition) and sorting of incoming nuclear emergency samples); *it is suggested that these aspects of the configuration and operations of this laboratory be evaluated in a future radiological emergency preparedness exercise if this has not been*			

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	done recently. **The notification procedure in Procedure N Section 2.1 indicates that all staff members are to be notified by telephone per the notification lists in Section 2.3 and 2.4; however, while Sections 2.3 and 2.4 state some notification responsibilities, they do not include formal lists; it is suggested that such explicit notification lists with names, telephone numbers, and pagers be included in Procedure N. (Although there is a notification record form (NEP-1), it only lists names and "called by" initials and does not include telephone numbers of those to be called.)** Laboratory screening procedure for incoming samples in Procedure N, Section 5.9, page 17 states: "Place a white computer label reading "2X BKG" on any sample with a survey meter reading greater than twice background." *It is suggested that the labeling be changed to read ">2X BKG" so as not to lead to unnecessary confusion (e.g. for a sample showing a reading of say 200 microR per hour).* Laboratory procedures in Procedure N Section 7 state several times (e.g., in Section 7.9.1) "Record the total quantity collected to the right of the "quantity analyzed" on the Data Sheet"; however, *there is insufficient space available at the specified location on the forms; accordingly it is suggested that the Data Sheet forms be redesigned to accommodate information that needs to be recorded.*			

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	Similarly, there is no specified location for recording geometry as instructed in Section 7.8.3. *Counting procedures outlined in Procedure N Section 8 need clarification. E.g., in Section 8.1 it states, "All samples will initially be counted for 20 minutes"; whereas in Section 8.2.3 it states "Count all samples for 15 minutes, unless instructed otherwise". Also, in Section 8.2.2, the procedures state "Count samples as soon as possible in the order of receipt in the counting room, unless instructed otherwise" and " Pay particular attention to "P" labels for priority samples" but does not indicate what substantive prioritization should occur.* Procedure N, "NEP Emergency Supply Audit," page 42 is set up as a checklist (available, "yes" or "no"); *it is suggested that this would be more useful if modified to be a inventory with quantity of items (e.g. number of 1.4 liter Marinelli containers available) entered.* *Some description of the laboratory facilities (with floor plans); equipment; data analysis procedures; and methodology for emergency sample data storage would be helpful.* *The plan should indicate what TRACES would be used for now that DILS is the primary system being used. Sheltering animals to ten miles at the General Emergency would conflict with caring for people (Procedure 8, Section 8.2.1).*			

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	In Procedure N, laboratory standard forms are designated by alphanumerics (e.g., NEP-1, DOH-4149) both within the text and in the table of contents of the nuclear emergency procedure appendices; however, the forms themselves have no alphanumeric designation – this should be corrected to enhance ease of use. *P. I-7, Section I, Para 5.9 - Massachusetts no longer has a plant within the 50-mile EPZ of NYS since Yankee Rowe is decommissioned.* Procedure K, Att 1 - *Vermont Yankee is within 50 miles of NYS and is not included on the map.*			
J.12	Section III, subsection 2.1.9 of the plan states that local agencies and the American Red Cross share primary responsibility for the registration and monitoring of evacuees at Reception Centers. In the same section, the plan specifies the assistance to local governments provided by the following agencies: SEMO (coordinate State assistance for monitoring of evacuating personnel, if requested by local government); Department of Social Services (if requested, assist in the registration of evacuees and coordinate activities of Red Cross and other recognized organizations). The details and procedures for monitoring and registering evacuees at reception centers are contained in the county RERPs.	I	Met	The State plan contains sufficient detail to meet the requirement. The State plan also refers to the county radiological emergency preparedness program plans on this issue.

Element	FEMA/RAC Internal Comment(s)	Rating Adequate (A) Inadequate (I)	State Rating	Draft State Report Comments
	Rockland County and Orange County Plans discuss requesting from New York State approximately 30 Monitoring Teams to assist in Monitoring evacuees from the Park, if required (ref. Rockland REPP, p. III-21, B.7.b and Orange County RERP, p. I-11, and p. II-22.). The New York State Radiological Emergency Preparedness Plan does not adequately address the resources necessary to accommodate such a request. Attachment 6 to Procedure B indicates that this monitoring will occur at the Orangeburg Armory and will be conducted by staff of the New York Guard. There are no details on activation, mobilization times, equipment availability or procedures to be used. Registration of evacuees is also not addressed.			
K.3.a	Radiological exposure control for emergency personnel is addressed briefly in the New York State plan in Section III.2.7, pages III-42 and III-43. Issuing dosimetry is noted briefly. Appendix G, page 13, gives a statewide inventory of dosimetry available; further discussion of instrument inventory and maintenance is given in Appendix G, pages G-4 and G-5.*In Section 7.0 ("Ingestion Pathway Teams") of Procedure G "Radiological Exposure Control Procedures," a discussion of radiological exposure procedures for ingestion pathway teams is expected. However, this section instead addresses other topics including milk sampling procedures (which would more appropriately be dealt with in Procedure M), personnel training, and sampling agencies.*	I		

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	Attention should be given to exposure control for sampling teams, and this is the appropriate place to address that topic. (Procedure M on page M-1 does call for dosimetry for sampling teams; further information should appear in Procedure G.). **Procedure G Attachment 6 item 4 (on page 1) states "Part 3, Section 1, G.4.2, of the New York State Radiological Emergency Preparedness Plan outlines further the requirements and procedures for permanent record dosimeters"; however, no such reference was located in the plan.** Dosimetry for laboratory personnel is outlined in Procedure N, Section 3.6, pages 6 and 7; only film badges and TLDs are specified for use. Section III, subsection 2.7, Emergency Personnel – Radiological Exposure Control, p. III-42: Do you intend to "minimize" or "reduce" radiological exposure of emergency response personnel?			
K.3.b	Radiological exposure control for emergency personnel is addressed briefly in the New York State plan in Section III.2.7, pages III-42 and III-43. Recording radiological doses is noted in the exposure control procedures listed. Further information is provided in Procedure G. Procedure G section 5.5.15 page G-9 states "Such notification will be made when fixed contamination exceeds 1 mR/hr or whenever the whole body cumulative dose reaches a multiple of 3 rem". *Notification at doses*	I		

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	that are multiples of 3 rem makes no sense; the statement should be modified to state explicitly at what dose (e.g., a total of 3 rem) or doses notifications should occur. **Personnel exposure guidance as discussed in Procedure G, pages G-1 through G-3, does not address the application of a conversion factor to dosimetry measurements in order to correct for TEDE doses.** *It is also suggested that the "Emergency Worker Exposure Record Card be modified to accommodate records of monitoring and decontamination at the PMC or special facility for decontamination, as specified in Procedure G sections 5.5.7 through 5.5.10.* Emergency worker exposure control procedures (Attachment 3 to Procedure G) indicate that emergency workers should read and record their dosimeter readings every 15 to 30 minutes following a release. Attachments 5, 6, 7, 8, 9, and 10 to Procedure G do not appear to be referenced from the text of Procedure G, and should be. **Appendix C, second paragraph: The reference "Part II, Section I, G-5 of the State REP Plan" is not readily found.** **Procedure H, page H-3, 9th diamond, identifies one of the most important assessment functions**			

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	performed by the State Department of Health, which is to calculate the ratio of the total effective dose equivalent (TEDE) to the dosimeter reading and provide the multiplication factor to State and local staff as appropriate. The State REP Plan does not contain the calculation method to implement this function.			
K.4	Section III, subsection 2.7 of the plan specifies the decision chain for authorizing emergency workers to incur exposure in excess of the general public protective action guide. If an accumulated gamma dose of 3R is registered on a self-reading dosimeter, the worker is to inform his/her supervisor or the appropriate EOC and request instructions. Doses in excess of 5 rem TEDE or 25 rem CDE Thyroid must be authorized by the Commissioner of the NYS DOH. The plan recognizes that different limits for reporting indicated dosimeter readings may need to be specified based on the type(s) of radioactive materials released. *Procedure G, Att 8 - The copy of Reg Guide 8.13 provided has been superceded by Rev. 3, June 1999. The attachment should include the Reg. Guide Rev. or date to facilitate updating of documents.*	*A*		
K.5.a	Procedure G, "Radiological Exposure Control Procedures," section 5.3.4 sets the action level for determining the need for decontamination at a survey instrument reading in excess of 0.1 mR/hr above	*A*		

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	background. *The procedures indicate that the monitoring should be conducted with an "open window" and therefore 0.1 mR/hr is not an appropriate unit.* The same action level is used for both personnel and equipment.			
K.5.b	Section III, Part 2.7, page III-43 states that DOH Assessment and Evaluation supervisor will activate State Emergency Worker PMCs at a SAE ECL. Section 5.1 of Procedure G states that the location of these State PMCs is shown in Appendix D. *The locations are actually shown in Appendix C (this minor error should be corrected).* There are two State PMCs designated for the Ginna and Nine Mile/Fitzpatrick sites and four for the Indian Point site. **There are no procedures to activate or mobilize staff to these centers. There are no floor plans for any of the centers and there is no equipment specified for any site.** Procedure G describes, in very general terms, the requirements for the PMCs and process for radiological monitoring and decontamination of personnel and equipment. **Section 5.3.2 states that monitoring will be performed by State/County agency personnel. The County plans must be reviewed to assure that this responsibility has been considered in the planning process (see J.12 comment).** Individuals whose decontamination is complicated	I		

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	by the presence of wounds will be referred to a designated medical facility for treatment and decontamination.			
L.1	The plan states that primary and backup hospitals for the treatment of contaminated injured individuals have been identified. These (MS-1) hospitals are listed in Appendix F of the plan where two hospital each are designated for the Ginna and Nine Mile/Fitzpatrick sites and four hospitals are designated for the Indian Point site.	A		
L.3	Appendix F to the plan contains a listing of medical facilities within the state considered capable of providing medical support for contaminated injured individuals. The Appendix states that the listed facilities are licensed under that part of the New York Sanitary Code dealing with ionizing radiation as having nuclear medicine departments. As a result, the facilities have procedures, trained personnel and equipment to deal with radiological contamination.	A		
L.4	This activity is assigned to the local risk County plans with supplemental support from the State. Section III, part 2.1.11 of the plan indicates that annual training is provided to selected medical transportation providers in the vicinity of each nuclear power plant site for the safe pre-hospital care and transportation of contaminated injured individuals.	A	Met	The State plan refers to the county radiological emergency preparedness program plans (EMS Section) on this issue.
M.1	Section IV of the plan discusses activities occurring	*A*		

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	during the late phase of a nuclear emergency. A Recovery Committee having authority and major responsibilities to make decisions relating to late phase activities will be appointed by the Disaster Preparedness Commission. The New York State Commissioner of Health will continue to have responsibility for recommending actions such as relaxing protective actions and allowing reentry into evacuated areas. The plan states that before assessing reentry of the public, it is necessary for the Accident Assessment staff to ensure that the source of the release or the threat of a release is under control. Decisions to allow reentry will also be based on the analysis of survey results including aerial monitoring data, ground monitoring and sample isotopic analysis to determine the location of the isodose line corresponding to the relocation PAG of 2 rem first year. Subsection 3.6 of the plan states that persons previously evacuated from non-contaminated areas will be allowed to return. Return orders are to be formulated in conjunction with local chief executives and shall be issued via media releases and announcements at congregate care centers. Persons evacuated from contaminated areas outside the restricted zone will be allowed to return on a gradual basis as confidence is gained from sample analysis and field measurements that the relocations PAGs specified in Table 1 of Section IV will not be exceeded. Procedure L is a generalized Relocation/Return/Reentry procedure to be used by the DPC member agencies in coordination with affected counties. *The State REP Plan differs slightly*			

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	from the County Plans in that the State REP Plan identifies a quarterly exposure limit of 1.25 rem for entry to restricted zones. Section IV, Table 2, page IV-9. The County Plans seems to use the 5 rem limit. There should be consistency between the State and County Plans in regard to the re-entry exposure limits.			
M.3	Section IV of the plan states that response organizations will be notified that recovery activities are being initiated via the Executive Hotline, the RECS line, EOC briefings and press releases.	A		
M.4	Attachment 1 to Procedure H, section 5.0 states that technical assistance from Brookhaven National Laboratory is used to calculate total population exposure.	A		
N.1.a	Section II subsection 3.7 of the plan states that an annual exercise of the NYS plan will be conducted.	A		
N.1.b	Procedure F lays out the process for conducting exercises of the plan and preparedness.	A		
N.2.a	Procedure F, Section 2.3 lists the frequency of testing for the specified types of communication drills.	A		
N.2.d	Procedure F, Section 2.3 states that radiological monitoring drills will be conducted annually. The drills will include the collection and analysis of water, vegetation, soil and air samples. Communications used for reporting sample results	A		

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	and the means for record keeping will also be tested.			
N.2.e	Procedure F, Section 2.3 states that health physics drills will be conducted semi-annually.	A		
N.3.a	Procedure F, Section 3.2 states that the SEMO will coordinate the establishment of exercise objectives and evaluation criteria.	A		
N.3.b	Procedure F, Section 3.2 states that the SEMO will establish the date and time of each exercise.	A		
N.3.c	Procedure F, Section 3.2 states that the scenario to be used will include a time schedule of real and simulated events	A		
N.3.d	See comment for N.3.c.	A		
N.3.e	Procedure F states that a narrative summary of each drill and exercise will be included in the scenario.	A		
N.3.f	Procedure F, Section 3.2 states that the SEMO will make arrangements for materials to be provided to RAC members and other evaluators.	A		
N.4	Procedure F, section 4.2 states that qualified evaluators will critique the exercises. A critique will be scheduled as soon as practicable after each exercise.	A		
N.5	Procedure F, Section 4.2 states that each organization establishes the means for evaluating	A		

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	observer and participant comments on areas needing improvement. Each organization establishes management control to ensure corrective actions are implemented.			
O.1	Section II, subsection 3.7.1 of the plan states that the SEMO sponsors a continuing training program for State and local officials having disaster responsibilities. This organization is responsible for coordination and delivery of training.	A		
O.1.b	Section II, subsection 3.7.1 of the plan states that the SEMO sponsors a continuing training program for State and local officials having disaster responsibilities. This organization is responsible for coordination and delivery of training.	A		
O.4.a	Procedure F, Attachment 1 describes the topics covered in training provided to public officials.	A		
O.4.b	Procedure F, section 2.0 states that training will be provided to accident assessment personnel.	A		
O.4.c	Procedure F, Attachment 3 describes the topics covered in training provided to radiological monitoring teams and analysis personnel.	A		
O.4.d	Procedure F, section 2.0 states that training will be provided to police, security and fire-fighting personnel	A		
O.4.f	Procedure F, section 2.0 states that training will be	A		

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	provided to medical and rescue personnel.			
O.4.h	See comment for O.4.f	A		
O.4.j	Procedure F, section 2.0 states that training will be provided to Command and control staffs, key personnel assigned to EOCs and public information personnel.	A		
O.5	Section II, subsection 3.7 of the plan states that training and retraining of State and local personnel is provided through a variety of means including formal courses, seminars, conferences, drills and exercises.	A		
P.1	Procedure F, section 2.0 states that training will be provided to key agency personnel assigned to State and county EOCs. **The criterion specifies that training be given to staff responsible for planning.**	I		
P.2	Procedure A, Section 2.0 identifies the Director of the SEMO as being responsible for the administration of the NYS REPP.	A		
P.3	Procedure A, Section 2.2.1 and 2.2.2 identify updating the plan and coordinating the plan with other agencies as two responsibilities of the Director of the SEMO.	A		
P.4	Procedure A, Section 2.2.3 states that the Director of the SEMO is responsible for the annual review and update of the plan.	A		

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P.5	Procedure A, Section 3.1 states that the Director of the SEMO will control the distribution of the plan to all officials as required.	A		
P.6	A detailed listing of support plans is contained in Section I, subsection 8.0 of the plan.	A		
P.7	Appendix I of the plan contains a listing of procedures and the sections of the plan they are used to implement. *There are errors in the Appendix that been discussed above.*	*A*		
P.8	Appendix H of the plan contains a cross-reference of the plan and procedures to the criteria contained in NUREG-0654	A		
P.10	Procedure A, section 3.2.3 states that the Director of the SEMO will review and update quarterly lists of telephone numbers of key personnel. *Procedure B, Attachment 11, page 2 needs to be updated to reflect the new telephone numbers for the United States Department of Agriculture. The new telephone number is 202-690-6486.* *P. I-9, Section I, Para 5.2.3 - Oyster Creek is owned by Amergen and operated by Exelon.* *Procedure B, Att 4, p.1 - List needs to be updated; Jay Dunkleberger retired.* *Procedure B, Att 11, Contact List - This list is very outdated, e.g., DOE-BAO (RAP); EPA Reg 11; NRC*	*A*		

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	Reg 1, NRC Operations Center; etc.			

A = Adequate.
I = Inadequate. Revise the plan based on comments/suggestions.
A = *Comments in italics should be addressed.*

RATING SUMMARY
NEW YORK STATE REPP – FEBRUARY 2001

Element	RAC Rating	Witt Rating	Element	RAC Rating	Witt Rating	Element	RAC Rating
A.1.a	Adequate	Met	H.3	Adequate	Met	M.1	*Adequate*
A.1.b	Inadequate		H.4	Inadequate	Met	M.3	Adequate
A.1.c	Inadequate		H.7	Adequate	Met	M.4	Adequate
A.1.d	*Adequate*		H.10	Adequate		N.1.a	Adequate
A.1.e	Adequate	Met	H.11	Inadequate		N.1.b	Adequate
A.2.a	Inadequate		H.12	Adequate		N.2.a	Adequate
A.2.b	Adequate		I.7	*Adequate*		N.2.c	Adequate
A.3	Inadequate	Not Met	I.8	Adequate	Met	N.2.d	Adequate
A.4	Adequate	Met	I.9	*Adequate*	Met	N.2.e	Adequate
C.1.a	*Adequate*		I.10	Inadequate		N.3.a	Adequate
C.1.b	*Adequate*		I.11	Inadequate		N.3.b	Adequate
C.1.c	Adequate		J.2	Adequate	Met	N.3.c	Adequate
C.2.a	*Adequate*		J.9	Inadequate		N.3.d	Adequate
C.3	Adequate		J.10.a	Adequate	Met*	N.3.e	Adequate
C.4	Inadequate		J.10.b	Adequate	Met*	N.3.f	Adequate
D.3	Adequate		J.10.c	Adequate	Met*	N.4	Adequate
D.4	Adequate		J.10.d	*Adequate*	Met*	N.5	Adequate
E.1	Inadequate		J.10.e	Inadequate	Met*	O.1	Adequate
E.2	Inadequate	Met	J.10.f	*Adequate*	Met*	O.1.b	Adequate
E.5	Inadequate		J.10.g	Inadequate	Met*	O.4.a	Adequate
E.6	Inadequate		J.10.h	Adequate	Met*	O.4.b	Adequate
E.7	Inadequate	Met	J.10.i	*Adequate*	Met*	O.4.c	Adequate
F.1.a	*Adequate*	Met	J.10.j	Adequate	Met*	O.4.d	Adequate
F.1.b	*Adequate*	Met	J.10.k	Adequate	Met*	O.4.f	Adequate
F.1.c	Inadequate	Met	J.10.l	*Adequate*	Met*	O.4.g	Adequate
F.1.d	*Adequate*	Met	J.10.m	Inadequate		O.4.h	Adequate
F.1.e	*Adequate*	Met	J.11	Inadequate		O.4.j	Adequate
F.2	Adequate		J.12	Inadequate	Met	O.5	Adequate
F.3	Adequate		K.3.a	Inadequate		P.1	Inadequate
G.1	Adequate	Met	K.3.b	Inadequate		P.2	Adequate
G.2	Adequate	Met	K.4	*Adequate*		P.3	Adequate
G.3.a	Adequate	Met	K.5.a	*Adequate*		P.4	Adequate
G.4.a	Adequate	Met*	K.5.b	Inadequate		P.5	Adequate
G.4.b	Adequate	Met*	L.1	Adequate		P.6	Adequate
G.4.c	Adequate	Met*	L.3	Adequate		P.7	*Adequate*
G.5	Adequate		L.4	Adequate	Met	P.8	Adequate
						P.10	*Adequate*

Rating Categories:

Adequate, The statements and concepts in the plan adequately address the planning criterion.

Inadequate, The statements and concepts in the plan do not adequately address the planning criterion.

Met* Comment provided for multiple sub-elements together.

Planning Standard/Requirement	Source Document	Where Addressed in the Plan	Requirement Met or Not Met	Comments
Evacuation (urgent removal of persons/animals) and Sheltering (supplemented by bathing and changing of clothes) to protect the public from exposure to direct radiation and inhalation from airborne plume.	EPA 400 1-3 2.3.1 5.5.1 5.5.2 5.5.3 Appendix E	Assigned to respective counties	Met	The State plan assigns this requirement to the respective county radiological emergency preparedness program.
Relocation and decontamination for protection against whole body dose (external exposure) due to deposited material and from inhalation of any resuspended radioactive particulate.	EPA 400 1.4 Appendix E	Sect III 11,12	Met	Note that relocation and evacuation are two distinct actions. The State plan also refers to the county radiological emergency preparedness program plans.
All PAG's should be consistent for all of the population.	EPA 400 2.1 (2.2)	Sect I 4 Sect III 7,8 26-41 Sect IV 7,8	Not Met	All PAGs are consistent for all of the population except for prisons and prisoner considerations

Planning Standard/Requirement	Source Document	Where Addressed in the Plan	Requirement Met or Not Met	Comments
Mechanism for obtaining detailed content of the plume.	EPA 400 2.2 (2-4)	Assigned to respective counties	Met	The State plan assigns this requirement to the respective county radiological emergency preparedness program.
Guidance on dose limits cited in plan.	EPA 400 2.5 (2-9)		Not Met	The plan states that means will be provided, but does not tell exactly how and no dose limits were found.
Coordination and recommendations based on plant conditions, for early evacuation and/or sheltering in pre-designated areas. Early estimates of the various components of projected dose to the population at the site boundary as well as more s\distant locations. Estimated time frames as soon as relevant source or release data becomes available.	EPA 400 4.1 (4-1)	Sect I 4 Sect III 7,8,26-41 Sect IV 7,8	Met	Recommendations were coordinated with local/State authorities and made available on a timely basis. Offsite notifications are covered for the plant in 10 CFR Appendix E Part 50. The State plan refers to the county radiological emergency preparedness program.
Designation of an emergency planning zone zone for protective action for plume exposure.	EPA 400 5.2.2 (5-3)	Assigned to respective counties	Met	The State plan assigns this requirement to the respective county radiological emergency preparedness program.
Establishment of Exposure Patterns using atmospheric transports and field teams including plume tracking.	EPA 400 5.2.2 (5-4)	Assigned to respective counties	Met	The State plan assigns this requirement to the respective county radiological emergency preparedness program.
Air sampling techniques/flow rates/time in plume/analysis information.	EPA 400 5.3	Assigned to respective counties	Met	The State plan assigns this requirement to the respective county radiological emergency preparedness program.

Planning Standard/Requirement	Source Document	Where Addressed in the Plan	Requirement Met or Not Met	Comments
Procedures for calculating dose conversion factors and derived response levels.	EPA 400 5.4; 5.6	Assigned to respective counties	Met	The State plan assigns this requirement to the respective county radiological emergency preparedness program.
Documentation of sequence of events.	EPA 400 7.1.3 (7-4)		Not Met	The State's methodology for event documentation is not specified in the plan.
Recommendations for surface contamination limits.	EPA 400 7.6.3 7.6.1	Assigned to respective counties	Met	The State plan assigns this requirement to the respective county radiological emergency preparedness program.
Dosemetric models, agricultural transport models, dietary intake, and other calculations relating to potential dose.	EPA 400 7.6.2 7.4 7.3 Appendix B	Sect III 9, 26-33 Proc H Proc J Sect III 34-41 Proc K Proc L	Met	The State plan refers to the county radiological emergency preparedness program plans on this issue.
Disseminating information to the public	10 CFR 50 App. E	Proc C 1-3 Sect III 10	Met	The State plan refers to the county radiological emergency preparedness program plans on this issue.

Planning Standard/Requirement	Source Document	Where Addressed in the Plan	Requirement Met or Not Met	Comments
Personnel monitoring	10 CFR 50 App. E		Not Met	A description of personnel monitoring should appear in the local and State plans, but it is not specifically mentions here. Although DOH may provide monitoring and staffing of monitoring centers, all monitoring devices and methods should be discussed in the State plan. The State plan refers to the NFO site emergency plans on this issue, as well as the County REPP plans.