

PRE-IMPLEMENTATION AUDIT
OF THE
DETAILED CONTROL ROOM DESIGN REVIEW
FOR THE
NEW YORK POWER AUTHORITY'S
INDIAN POINT STATION, UNIT 3

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FOREWORD

This audit report serves as an addendum to the Technical Evaluation Report (TER) which was provided to the NRC on January 22, 1986, and documents the findings from NRC's Pre-Implementation Audit of the Detailed Control Room Design Review (DCRDR) being conducted by the New York Power Authority (NYPA) for its Indian Point Station, Unit 3. The Pre-Implementation Audit was conducted by a team comprised of one representative from the the NRC, two representatives from Science Applications International Corporation (SAIC), and one representative from Comex Corporation, a subcontractor to SAIC.

The Pre-Implementation Audit consisted of extensive discussions held during the week of June 16, 1986, with representatives of NYPA and General Physics Corporation (GPC), NYPA's human factors consultants. DCRDR methodologies and resultant human engineering discrepancies (HEDs) were reviewed. Where clarification of the HEDs discussed was needed, photographs and panel drawings were consulted. During the Pre-Implementation Audit, visits were made to the control room. In addition, the audit team conducted a sample survey of selected panels in the control room to ensure that all HEDs had been documented by NYPA.

SAIC's participation was provided under Contract NRC-03-82-096, Technical Assistance in Support of Reactor Licensing Actions: Program III. This addendum to the TER is based on the Pre-Implementation Audit, and it updates findings and conclusions contained in the January 22, 1986, TER. SAIC previously participated in the Program Plan review and in a meeting with the licensee.

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Pre-Implementation Audit
of the
Detailed Control Room Design Review
for
Indian Point Station, Unit 3

INTRODUCTION

This report documents the findings from NRC's Pre-Implementation audit of New York Power Authority's (NYPA) Detailed Control Room Design Review (DCRDR) for its Indian Point Station, Unit 3. The decision to conduct a Pre-Implementation Audit was based on the findings contained in the Technical Evaluation Report for NYPA's Indian Point Station, Unit 3 DCRDR Summary Report (Reference 1). The requirements set forth in NUREG-0737, Supplement 1, "Requirements for Emergency Response Capability" December 1982 (Reference 2), served as the basis for evaluations of the Licensee's Summary Report and conducting Pre-Implementation Audit. The purpose of the audit was to obtain clarification of concerns found during evaluation of the licensee's DCRDR Summary Report. Participants in the audit meetings are identified in Appendix A.

The licensee's human factors engineering review of the Indian Point, Unit 3 (IP-3) control room began with a preliminary design assessment in response to NUREG-0660 (Reference 3). This preliminary design assessment is referred to as Phase 1 in the licensee's DCRDR documents. The licensee's DCRDR (Phase 2) began with the submittal of the Program Plan to the NRC on August 3, 1984 (Reference 4). The NRC staff comments on the Program Plan were forwarded to NYPA on October 24, 1984 (Reference 5). Based on a review of the Program Plan, the NRC Project Manager for IP-3 arranged for a meeting to discuss concerns regarding the Program Plan. NRC comments on information gathered at that meeting were transmitted to NYPA (Reference 6). NYPA submitted a two-volume Summary Report for IP-3 on October 31, 1985 (References 7 and 8). The findings from SAIC reviewer's evaluation of the licensee's Summary Report and the Pre-Implementation Audit provided below are arranged in order of the DCRDR elements identified in Supplement 1 to NUREG-0737.

DISCUSSION

1. Establishment of a Qualified Multidisciplinary Review Team

Based on SAIC's review of the Summary Report, the following concerns were not satisfied by NYPA for Indian Point, Unit 3:

- a. NYPA did not give assurance of adequacy of team structure by giving definitions of personnel assignments for all DCRDR tasks.
- b. NYPA did not give assurance that the core group would be available through completion of the DCRDR, particularly to select and verify corrections for those HEDs that were not yet resolved.

During the Pre-Implementation Audit, NYPA addressed the first concern by providing the following definition of personnel assignments for the major DCRDR tasks:

- Operating Experience Review - General Physics
- Operations Personnel Survey (written and verbal) - General Physics
- Control Room Survey - General Physics
- Task Analysis - General Physics
- Verification and Validation - General Physics
- Categorization of HEDs - General Physics and NYPA
- Recommendation for Resolutions - General Physics
- Evaluation of Recommendations - General Physics and NYPA
- Management Approval of Recommendations - NYPA

Review of the resumes submitted by both NYPA and General Physics Corporation indicated that expertise in all recommended disciplines was available to staff the above assignments.

Regarding the second concern, NYPA clarified that the DCRDR team will be available for the development of all design changes. NYPA has several special studies in progress that address generic problems, such as proper labeling and demarcation of panels. Preliminary results of these studies have been forwarded to the DCRDR core group for review and comment. The DCRDR team is continuing with the review responsibilities through

September 30, 1986, which is the licensee's anticipated date for receipt of a Supplement to the Summary Report which will cover the unresolved issues of these special studies.

Starting in October 1986, the resolution of HEDs will not necessarily include a human factors expert, unless a "major design change" is involved. NYPA's intent is to subject plant modifications to rigorous human factors guidelines, utilizing in-house resources and procedures. In the event a modification is considered major, a human factors expert will be contracted for the project. The special studies are examples of such instances in which outside help will be procured. The audit team agreed to this approach.

Based on these findings, the NRC audit team concluded that the licensee has satisfied this requirement of NUREG-0737, Supplement 1.

2. Function and Task Analysis

The concerns raised in SAIC's review of NYPA's Summary Report were as follows:

- a. The scenarios selected for the scope of the task analysis did not appear to sample all emergency tasks required ^{of} the operators.
- b. Some of the emergency operating procedures (EOPs) defined in the low pressure Westinghouse Owners Group (WOG) Emergency Response Guidelines (ERGs) appeared to be omitted from the analysis of operator information and control needs.
- c. There was an apparent omission of some information and control characteristics that should have been considered during the task analysis.

Through discussions held with the NYPA and General Physics Corporation (GPC) personnel involved in conducting the system function review and task analysis, the NRC audit team determined that for the first two of the three concerns NYPA used the WOG task flow charts and the plant-specific list of safety and safety-related systems to define a set of scenarios which sampled various emergency conditions and the plant systems used in those condi-

tions. All tasks for the plant-specific EOPs were identified and cross-referenced to the selected scenarios to determine which operator tasks were not included in the scenarios. The missing tasks were identified as "residual tasks," and analyzed independently for information and control needs. Thus, the sum of the operator tasks addressed in the scenarios and in the residual tasks constituted all emergency tasks required of the operators. The NRC audit team agreed that the procedure described above is a satisfactory approach for conducting a task analysis.

For the last concern in SAIC's review of the Summary Report, NYPA acknowledged that not all relevant characteristics were listed in the "prefill data forms," associated with the task analysis. Such items as "precision, accuracy, and feedback desired from control actuation" should have been included. It was therefore possible that not all relevant characteristics were determined a priori. However, the audit team concluded that NYPA did perform such determinations during rigorous suitability checks described in paragraph 2.2.4.3 of their Summary Report. The process of verifying instrument and control suitability was shown graphically in Figure 2.2-6; the issues of precision, accuracy, and feedback were among the characteristics investigated as illustrated in the figure.

In order to verify the adequacy of this process and its results, the audit team selected and evaluated a specific example of an EOP step (ECA-21.02A) subjected to the above referenced methodology. The step requires reduction of auxiliary feedwater (AFW) flow to 25 GPM in each steam generator. The relevant characteristics listed during the pre-fill effort were "meter, linear, analog, GPM (0-450)," thus supporting the observation that possible inadequacies existed in totally describing precision and accuracy. However, the audit team noted that during the verification activity to determine suitability, HED 474 was prepared which noted that AFW flow meters were not sensitive enough to permit measuring 25 GPM in accordance with the task requirement. NYPA relied on the suitability criteria checks of Figure 2.2-6 to determine display and control acceptability. Based on this verification approach, the NRC audit team concluded that this portion of the DCRDR was conducted in a satisfactory manner.

In summary, the concerns based on the review of the licensee's Summary Report have been resolved by the information provided by NYPA during the Pre-Implementation Audit. The audit team concluded NYPA's System Function

and Task Analysis satisfies the requirements of Supplement 1 to NUREG-0737. However, since IE Information Notice No. 86-64 dated August 14, 1986, indicates that many utilities may have not appropriately developed or implemented upgraded emergency operating procedures (EOPs), the licensee should verify that the problems with EOPs identified in this Information Notice are not applicable to Indian Point Unit 3. If there are problems, the licensee should consider re-evaluating the adequacy of their DCRDR task analysis.

3. Comparison of Display and Control Requirements With a Control Room Inventory

Review of the licensee's Summary Report showed that NYPA had applied the necessary methodology to complete a comparison of information and control requirements with a control room inventory. However, the reviewers had the following concerns:

- a. The technical disciplines of individuals performing the comparison of information and control requirements with a control room inventory may not be suitable. For instance, a human factors specialist may not have been available.
- b. Based on what was presented in the Summary Report, the scenarios and the EOPs selected for the validation of operator actions appeared to be incomplete. The reviewers also needed clarification from NYPA on the scope of the comparison of information and control requirements with a control room inventory. For instance, which EOPs and associated operator tasks were included for the walk-throughs?

During the Pre-Implementation Audit, the NRC audit team determined that General Physics did provide a human factors specialist and nuclear operations expert to perform the comparison of information and control requirements with the control room inventory. The resumes for these individuals were included in the Summary Report and SAIC reviewers judged these individuals appropriate to perform these duties.

In addition the NRC audit team found that all EOP tasks, whether from the selected scenarios or other residual tasks, were subjected to task

analysis and the associated evaluations (verification of task performance and validation of operator functions). Therefore, a comparison of information and control requirements with the control room inventory was made for all EOP tasks as required in NUREG-0737, Supplement 1.

In summary, the audit team concluded that the licensee's process and results of the comparison of a control room inventory with information and control requirements satisfy this requirement of NUREG-0737, Supplement 1.

4. Control Room Survey

The licensee's Summary Report indicated that a team of human factors engineers and operations personnel performed the control room survey and that control room operators or supervisors were helpful when control and display functional groupings and integration were examined panel by panel. The Summary Report also confirmed that the NUREG-0700 guidelines were used for checklists. However, the reviewers' only concern was that the emergency lighting had not yet been evaluated.

During the Pre-Implementation Audit, it was confirmed that the emergency lighting system had not been surveyed in accordance with the guidance of NUREG-0700. NYPA indicated that their approach relied on the subjective results of the operator questionnaire to evaluate the adequacy of the emergency lighting rather than on the objective results from quantified measurements in accordance with the applicable guidance. Operators reported that emergency lighting levels posed no problems. The audit team concluded that this portion of the survey of the DCRDR was incomplete, and that the control room emergency lighting system of Indian Point Unit 3 would have to be surveyed in accordance with the guidance of NUREG-0700 (Reference 9) in order to achieve adequate compliance with the requirements of Supplement 1 to NUREG-0737. In their Supplemental Summary Report, NYPA should submit the results of the emergency lighting system survey, including all discrepancies identified and their dispositions.

In summary, in order to satisfy this requirement of Supplement 1 to NUREG-0737, the licensee must perform an objective survey of the control room emergency lighting. The results of this survey, including the disposition of all HEDs identified, should be forwarded to the NRC in the Supplemental Summary Report.

5. Assessment of HEDs to Determine Which Are Significant and Should Be Corrected

NYPA's methodology for HED assessment is described in Section 2.3 of their Summary Report. The process was completed by the review team which proceeded with the assessment by first determining the importance of HEDs based on the associated error potential and error consequences to plant safety. The team used the guidance provided in NUREG-0801 (draft) and developed a set of criteria to help define the potential for error. Criteria used to assess the potential error consequences were whether (1) an unsafe condition may result, and (2) a technical specification violation would result. A table of criteria used to guide evaluators' thoughts in making that determination was provided on page 40 of the Summary Report. The result of the assessment was the separation of HEDs into four categories to reflect levels of error potential and safety significance. Cumulative effects of Category 4 HEDs were also considered during assessment.

The description of HED assessment, which NRC staff reviewers found to be an adequate process, is consistent with that submitted in the licensee's Program Plan. The NRC audit team concluded that the process was systematic and resulted in the identification of safety-significant HEDs that, when corrected, will reduce the potential for operator error. The reviewers find that NYPA has satisfied this requirement of Supplement 1 to NUREG-0737.

6. Selection of Design Improvements

The licensee's Summary Report indicated that the process to select design improvements was carried out for many HEDs. However, the reviewers needed NYPA to resolve the following issues during the Pre-Implementation Audit:

- a. A certain number of HEDs (approximately 30 HEDs in Categories 2 and 3) were part of ongoing studies for which corrections were not yet developed.

- b. NYPA should clarify the degree of human factors participation in management review of proposed design improvements and the decision for action or justification for no action.
- c. The use of a mock-up to develop solutions to HEDs was not discussed in the Summary Report.

During investigations into these issues at the Pre-Implementation Audit, the NRC audit team determined that major studies are underway for labels, color coding, demarcation of panels, lighting, communications, annunciators, and correlation of control switches with reset pushbuttons. These studies are being performed by an outside contractor (United Engineers and Constructors, UE&C), with a due date of June 30, 1986. Preliminary results have already been submitted to the licensee, and the NRC audit team was briefed on the contractor's methodology and expertise, and shown some of these preliminary results. The contractor is utilizing the NYPA human factors maintenance plan and other applicable guidance (e.g., NUREG-0700) in performing the studies. The audit team noted that UE&C is duplicating much of the survey work as a confirmatory measure of previous surveys. NYPA expects to complete review of its contractor's submission on or before July 15, 1986. NYPA's comments will be incorporated by the contractor; NYPA will then submit a supplement to its Summary Report, including the results of the studies and proposed design solutions, by September 30, 1986.

Because the UE&C representative is an instrumentation and control engineer and was brought in after the original survey effort, the NRC auditors asked NYPA to include the human factors specialist from GPC to review and verify proposed design changes. The licensee indicated that it would consider obtaining that input from its original human factors contractor.

The audit team noted that as a part of the labeling effort in the control room, a standardized list of acronyms is being prepared. The audit team understood that the licensee intends to make all abbreviations on labels in the control room conform with the standard list. However, the audit team learned that at the present time the licensee has no intent to ensure that all applications of abbreviations (acronyms) will conform to the standard list, e.g., the upgraded EOPs will not necessarily be changed to comply with the standardized list in the control room. The licensee agreed

to consider standardizing all abbreviations used throughout the control room, including all equipment.

NYPA advised the NRC of the reasons certain HEDs would not be corrected and of the manner in which others will be corrected. The licensee was advised of the NRC staff position that all HEDs requiring correction should be corrected within two refueling outages following submission of the Summary Report, or within three years, whichever is sooner. Current scheduling places the first outage in approximately February 1987, with the second outage (major outage with steam generator replacement) eighteen months later.

NYPA clarified that GPC provided the human factors specialist for participation in selection of proposed design improvements. Reviewers of the Summary Report noted in the TER that at the management review level, GPC was not involved in the decision for action or justification for no action. Together with NYPA, the audit team reviewed HED corrections and justifications for no corrections in order to determine the adequacy of decisions. With the exception of five HEDs, the dispositions appeared adequate. (The description of these five HEDs is given later in Section 9 of this report).

The use of a mock-up was not included in developing resolutions to the HEDs. Any questions regarding resolution proposals were resolved in the control room itself. The licensee's contractor, UE&C, is using drawings of the control panels in order to develop design corrections that are part of the special studies.

The TER stated that those HEDs which are the subject of "other studies" must have the proposed corrections and implementation schedules described in a Supplement to the Summary Report. NYPA committed to forwarding this information.

In summary, based on the above findings and information, the audit team concluded that when the special studies are completed and appropriate design corrections acceptable to the NRC are developed, NYPA will have satisfied this requirement of Supplement 1 to NUREG-0737. NYPA was advised to include human factors specialists throughout completion of the selection of design improvements phase arising from the completion of these special studies.

7. Verification That Selected Design Improvements Will Provide the Necessary Correction Without Introducing New HEDs

During the November 1984 meeting, the NYPA committed to provide a description of the verification procedure in the Summary Report. NYPA's discussion of this requirement is on pages 40-42 of the Summary Report. NYPA states on page 41, "Verification is accomplished by the following:

- Comparison of the modified main control room design with the Human Factors Maintenance plan for the Indian Point Unit Three.
- Comparison of the modified main control room design with the instrumentation and control requirements identified during the control room survey and task analysis."

NYPA's Summary Report adequately described the process to verify that selected design improvements correct the HED without introducing new HEDs. During the audit, the NRC team reminded NYPA that it is required to continue applying the verification process until design corrections for all HEDs are selected. It is also expected that the disciplines of human factors engineering and nuclear operations participate in this process. When these expectations are met, NYPA will have met this requirement of Supplement 1 to NUREG-0737.

8. Coordination of the DCRDR With Other Programs

The licensee's Summary Report indicated that substantial efforts were made to integrate the different emergency response initiative programs. However, the reviewers of the Summary Report were concerned that integration of the Reg. Guide 1.97 modifications and the safety parameter display system (SPDS) into the control room may not have been adequate.

During the Pre-Implementation Audit, the audit team found that a contractor (UE&C), managed by a NYPA task force, is performing the Reg. Guide 1.97 work and that the SPDS is a Combustion Engineering system, modified extensively to be plant-specific. Both NUREG-0737 initiatives are "in-progress" relative to installation, testing, and operation, and safety analysis reviews (SAR's) have been prepared and submitted to NRC.

Reg. Guide 1.97 instrumentation requirements are being evaluated in the engineering sense only to support deviations from the Reg. Guide. No attempt was made by NYPA to establish required information needs complying with Reg. Guide 1.97 intent from a task analysis standpoint. However, once an engineering determination has been made, installation is in accordance with the previously mentioned Human Factors maintenance plan, and the newly revised administrative procedures which are sensitive to Human Factors issues.

The SPDS installed in the Indian Point 3 Control Room was subjected to the survey guidelines of NUREG-0700. In addition, the design of the SPDS was integrated with the development of the critical safety functions which are common to the development of EOP's. It follows then that these other emergency response initiatives share some degree of commonality with the DCRDR.

In the Summary Report, the SPDS was listed as the means for resolving and correcting several HEDs. Reviewers of the Summary Report questioned the appropriateness of the SPDS for such resolution. Most HEDs concerned the location of area and process radiation monitors on back panels of the control room. Attending to these panels required operator absence from the immediate area of the main control room for a few moments. Another HED concerned the necessity of monitoring core thermocouples. The audit team observed the displays of the "qualified" SPDS (QSPDS) and the critical safety function monitoring system. All of the parameters for monitoring core thermocouples are displayed as part of the containment integrity critical safety function. In addition a mapping diagram is provided for core thermocouples; four thermocouples in each quadrant may be called up on the highest level display. Appropriate menus permit easy access to graphic display of monitor locations; cursor control for immediate selection of any monitor reading is by "meatball" (Ramtech terminal). Also immediately available is trend plotting of any of the parameters in groups of four, with intervals of plotting as low as every two seconds. Thus the SAIC reviewers find the proposed uses of SPDS for resolving these HEDs acceptable.

In summary, the NRC audit team concluded that NYPA's integration and coordination program meets this NUREG-0737, Supplement 1 requirement.

9. Analysis of Proposed Corrective Actions and Justifications for HEDs Left Uncorrected

Reviewers of the Summary Report noted numerous HEDs for which the corrective action to be taken on the HED was unclear, or the justification for not correcting the HED was deemed inadequate. The audit team reviewed all Category 1, 2, and 3 HEDs to ensure that adequate action was being taken by NYPA. Most Category 4 HEDs were also reviewed to ensure that the proper category was assigned. During the course of discussions, the audit team learned that the seven team members convened to rate and categorize the HEDs on a majority rule basis. Any team member could disagree with the rating however, and therefore ^{was} provide a chance for reconsidering the categorization of the HEDS. NYPA stated that reconsiderations resulted in the upgrade of approximately 80 HEDs to Category 1 and the downgrade of 20 HEDs to Category 4.

In addition, the audit team conducted a sample survey of selected panels in the control room to ensure that all HEDs had been documented by NYPA. Results of the survey indicated that the HEDs examined by the audit team had been adequately addressed by NYPA. The audit team also reviewed a sample of HEDs that had been prepared in the original survey, but were discarded during the initial categorization process for reasons of duplication, misinterpretation/irrelevancy of NUREG-0700 Guideline, or correction of the HED prior to the categorization process. The findings indicated that proper consideration had been given to these HEDs and their dispositions are deemed adequate.

The audit team noted five HEDs that required reevaluation by the licensee as follows:

- HED 433 (Category 4): Instrument and DC BUS voltages on back panel (Safety Systems).
- HED 428 (Category 4): Manual controls for level controls on hot well make-up and return to condensate storage tank are opposite each other, but physically adjacent (Non-Safety System).

- HED 497 (Category 2): Steam generator atmospheric dump valves have no position indication for a demand type controller (Non-Safety System).
- HED 487 (Category 4): EOP figure has inadequate definition on the ordinate; cannot read flow requirement close enough (Safety System Related since deals with SI Flow).
- HED 379 (Category 2): Low head RECIRC flow gauges do not permit reading value of concern (Safety System).

In summary, the audit team concluded that this portion of the licensee's DCRDR was adequate, with the exception of the disposition of the above HEDs. NYPA should respond to the above HEDs in their Supplemental Summary Report. NYPA also should respond to those HEDs noted in Appendix C of SAIC's TER, "HEDs undergoing additional study for which a design solution is to be proposed or made final."

CONCLUSIONS AND RECOMMENDATIONS

NYPA has provided a generally thorough and comprehensive Summary Report of its IP-3 DCRDR. However, NYPA needs to provide information in a Supplemental Summary Report to address the NRC's remaining concerns. Until the following information is provided, the DCRDR cannot be considered complete:

- Control Room Survey
 - Results of the emergency lighting system survey performed according to the guidance of NUREG-0700.
- Selection of Design Improvements
 - Methodologies or approach for the studies and the results/dispositions of these studies (see Appenidix C of the Summary Report) that were incomplete at the time of the Summary Report submittal, including:
 1. Labels, color coding, demarcation of panels

2. Lighting
3. Communications
4. Annunciators
5. Correlation of control switches with reset pushbuttons.

- Reevaluation of the following HEDs:

379, 428, 433, 487, and 497

- Implementation schedule for design improvements associated with HEDs that are part of ongoing studies.

REFERENCES

1. "Technical Evaluation Report of the Detailed Control Room Design Review for New York Power Authority's Indian Point Station, Unit 3," U.S. Nuclear Regulatory Commission, January 22, 1986.
2. NUREG-0737, Supplement 1, "Requirements for Emergency Response Capability," USNRC, Washington, D.C., December 1982, transmitted to reactor licensees via Generic Letter 82-33, December 17, 1982.
3. NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident," May 1980, Revision 1, August 1980.
4. "Program Plan for the Control Room Design Review," New York Power Authority, Indian Point Nuclear Power Plant, August 3, 1984.
5. Review of the Detailed Control Room Design Review Program Plan for New York Power Authority's Indian Point Station, Unit 3, Division of Human Factors Safety, U.S. NRC, October 24, 1984.
6. Minutes of meeting held between New York Power Authority and the Nuclear Regulatory Commission, December 14, 1984.
7. Detailed Control Room Design Review Summary Report, Methodology and Approach, Volume 1, New York Power Authority, October, 1985.
8. Detailed Control Room Design Review Summary Report, Human Engineering Discrepancy Results, Volume 2, New York Power Authority, October 1985.
9. NUREG-0700, "Guidelines for Control Room Design Reviews," U.S. Nuclear Regulatory Commission, December 1982.

APPENDIX A

Attendees of Meetings Held During the Pre-Implementation Audit
of Indian Point, Unit 3 (June 16, 1986)

NYPA Representatives

Pete Kokolakis	NYPA
Judson Ellmers	NYPA
Hamilton Fish	NYPA
Jim Cannon IV	NYPA
Steve Meyer	NYPA
Sam Petrosi	NYPA
Ed Noel	NYPA
J. Gullick	NYPA
Ed Diamond	NYPA
Richard J. Burrone	NYPA
Thomas S. Cardil	NYPA
Kenneth A. Parlee	UE&C
Don Vinchkoski	NYPA
Lothar Schroeder	GP
Craig Harley	GP
Don Burgy	GP
Tom Davis	GP

USNRC Representatives

Joel J. Kramer	USNRC
Carol Kain	SAIC
Kiran Chadda	SAIC
David H. Schultz	Comex

APPENDIX B

Attendees of Exit Meeting Held During the Pre-Implementation Audit
of Indian Point, Unit 3 (June 18, 1986)

NYPA Representatives

Pete Kokolakis	NYPA
Jim Cannon	NYPA
Joseph Russell	Supt of PWR/IP3
W.A. Josiger	Resident Manager
M.P. Cass	NYPA
Thomas S. Cardil	NYPA
Steven Meyer	NYPA
Lothar Shroeder	GP
Craig Harley	GP
Ed Noel	NYPA
Don Vinchkoski	NYPA
Ed Diamond	NYPA
Sam Petrosi	NYPA
Richard J. Burroni	NYPA
K. Gus Mavrikin	NYPA

USNRC Representatives

Joel J. Kramer	NRC
Carol Kain	SAIC
Kiran Chadda	SAIC
David H. Schultz	COMEX
Peter Koltay	NRC Resident Inspector
J.D. Neighbors	NRC/PM