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DCS
PDR

INDIANA MICHIGAN POWER

March 19, 1999 AEP:NRC:1260GH

Docket Nos.: 50-315
50-316

Director, Office of Enforcement
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Donald C. Cook Nuclear Power Plant, Units 1 and 2
ENFORCEMENT ACTIONS 98-150, 98-151, 98-152 AND 98-186
REPLY TO NOTICE OF VIOLATION DATED OCTOBER 13, 1998.

Dear Sir:

By letter dated October 13, 1998, Indiana Michigan Power Company (I&M), Licensee for the Donald C. Cook Nuclear Power Plant, Units 1 and 2, received the above-referenced Notice of Violation (NOV) and Proposed Imposition of Civil Penalty. The violations cited in the subject NOV were initially identified in five separate inspections conducted by the Nuclear Regulatory Commission (NRC) at the Cook Nuclear Plant (CNP) (reference NRC Inspection Reports 50-315, 50-316/-97201, -97017, -98004, -98005, -98009). A pre-decisional enforcement conference was held on May 20, 1998, during which I&M acknowledged the apparent violations involving concerns in four programmatic areas identified by the NRC, described its assessment of the root causes, and presented its corrective actions. Since receipt of the subject NOV, I&M has added several key individuals to its senior management team, evaluations of the restart plans and prior assessments have been performed, and expanded discovery efforts have been initiated. The expanded discovery effort and associated corrective actions are intended to provide reasonable assurance that each unit, when ready for restart, will be operated safely and in accordance with its design and licensing bases. The expanded discovery effort was discussed with the NRC in a public meeting held at NRC offices on February 11, 1999 and has been documented in a revision of the CNP Restart Plan.

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The initial revisions to the CNP Restart Plan included assessments of engineering programs and functional areas in addition to the System Readiness Reviews initiated prior to that time. The aim of those revisions was to ensure that the causes of the shutdown and extent of the conditions identified in the referenced inspection reports would be appropriately addressed prior to requesting NRC concurrence for restart. Revision 4 of the CNP Restart Plan addressed resolution of specific 0350 restart items as the NRC had established a Restart Panel for CNP, pursuant to NRC Inspection Manual Chapter (MC) 0350.

Following the guidance in the CNP Restart Plan the initial System Readiness Reviews, programmatic and functional area assessments were performed and numerous restart items were identified and incorporated into the restart work plan and schedule. Shortly after the arrival of the Senior Vice President-Nuclear Generation in the summer of 1998, a Safety System Functional Inspection (SSFI) of the Auxiliary Feedwater System was conducted to assess the efficacy of the initial System Readiness Reviews. This SSFI identified new design and licensing basis issues that had not been previously detected. During this same timeframe an NRC inspection identified programmatic weaknesses in the CNP engineering program for monitoring motor operated valves. The Senior Vice President-Nuclear Generation responded by commissioning an assessment of engineering programs by a panel of industry experts. The resulting Engineering Issues Review Group's assessment identified additional system design and licensing basis issues, potential weaknesses in engineering programs and processes and potential vulnerabilities with respect to the scope of systems reviewed during the prior System Readiness Reviews. Additional assessments were performed at the direction of the new Vice President of Nuclear Engineering.

The conclusion reached by I&M in light of the results of these assessments was that it would be necessary to expand discovery efforts, employing more rigorous industry proven processes to accomplish the original objectives of the restart plan. The foregoing conclusion was discussed with the NRC at a public meeting held on December 22, 1998. Shortly thereafter, senior management directed several work process standdowns and a moratorium on restart issue resolution so that CNP personnel could concentrate on preparations for the expanded discovery effort the central focus being Expanded System Readiness Reviews (ESRR). The ESSR will cover almost every system plant wide (i.e., over 120 systems in all). Those systems selected for review were classified into two (2) levels and will receive reviews at a level of rigor based on risk significance. The selection of the level one systems for review was primarily based on Maintenance Rule consideration, systems required for safe shutdown, significant attendant/support systems, and systems identified as having experienced a large amount of corrective maintenance in the past. The results of these reviews will be evaluated, classified and incorporated into an integrated restart

schedule, which will guide our continuing restart efforts. The ESRR process is an industry proven process that has bee benchmarked with successful efforts at other facilities in extended outages. As stated in our February 11, 1999, public meeting with the NRC, the principal focus of the ESRR process is to provide reasonable assurance that key systems are capable of meeting their safety and accident mitigation functions.

The CNP Restart Plan remains the principal program to provide reasonable assurance that programmatic and functional area problems are identified and appropriate corrective actions are implemented. Thus the scope of the restart plan includes: (1) identification and evaluation of the causes of the extended shutdown, (2) resolution of specific issues related to the shutdown as identified by the NRC, (3) evaluation of the materiel condition of the safety systems at the plant and (4)assessment and resolution of programmatic and functional area issues necessary to support safe operation of the units.

In addition to the reviews of safety systems at CNP performed in connection with the restart efforts, we have also considered the impact of the "as found" degraded conditions on overall safety system functionality. The NRC's letter of October 13, 1998, states that the violations, "taken in total, resulted in a lack of reasonable assurance that following a design basis LOCA, i.e., large break, the ECCS and containment would have functioned." Some members of the public have also expressed their concern regarding the safety implications of the violations relating to CNP containment systems. Although we had already made the decision to refurbish the ice condensers, perform expanded system readiness reviews and work to restore plant systems to design basis conditions, we felt that an evaluation of the safety significance of the "as found" condition of the ECCS and containment systems was needed.

To this end, I&M commissioned independent assessments of the safety significance of deficiencies identified in the ECCS and containment systems. These safety system functionality reviews provided insight into the robustness of the design of certain containment systems. The analyses are of a best estimate type and do not rely on many of the conservatisms found in licensing analyses of record. Further, I&M commissioned SCIENTECH, Inc. to perform a third party review of the independent assessments. These assessments include the "as found" conditions that could affect sump inventory (NPSH and vortex prevention), the potential for debris clogging of the containment recirculation sump screen, the ice condenser containment functionality, the performance of the partially plugged containment spray and the residual heat removal (RHR) spray headers and nozzles. Additionally, SCIENTECH reviewed the potential radiological consequences based on available information regarding the "as found" conditions of the plant.

The conclusions of these independent studies performed to date indicate that, although there was a degradation in margin due to the degraded and non-conforming conditions identified in the cited violations, the ECCS and ice condenser containment systems would have functioned and did not pose an undue risk to the health and safety of the public in the "as found" condition. The conclusions are preliminary in that they are under review by I&M and cannot anticipate the potential impact of any issues discovered in the ESRR process as it progresses.

Notwithstanding these conclusions, the degradation in margin resulting from the "as found" conditions is unacceptable for operation of CNP. Senior management is ensuring that these conditions are corrected before the units are returned to power operation. We will continue to assess the impact on safety significance of issues identified at CNP, particularly as we move forward with discovery in the ESRR process. I&M will take actions to provide reasonable assurance that any identified plant conditions that deviate from the design and licensing bases are appropriately restored, re-analyzed or addressed by licensing action.

In addition to our evaluation of the overall safety significance, we have looked beyond the specific cited violations in the NRC's NOV to the underlying issue of CNP management effectiveness. Initially four programmatic issues bearing on management effectiveness were discussed at the pre-decisional enforcement conference. Since that time, our evaluations of the reasons for the violations cited in the NOV have identified additional programmatic weaknesses. CNP senior management will address the issues of management effectiveness and programmatic improvements through development of leadership plans focused on functional areas. The use and purpose of these leadership plans are described in the CNP Restart Plan and are summarized in Attachment A to this letter. Attachment A also discusses the programmatic aspects of specific violations and the associated corrective actions that will be taken and documented through the CNP Restart Plan. Leadership Plans to address issues and improvements identified in Attachment A are currently under development with a target date of May 3, 1999. The CNP Restart Plan, Rev. 5 has been approved and submitted to the NRC.

The attachments to this letter provide I&M's responses to the programmatic issues identified through management evaluations (Attachment A) and the specific responses to the individual violations cited (Attachment B). In summary, the identified deficiencies have been or will be addressed and resolved through the CNP Restart Plan as described in Attachments A and B.

If you have any questions or desire additional information, please contact D. F. Kunsemiller, Director of Regulatory Affairs (616-466-2405).

Sincerely,

R. P. Powers
Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 19 DAY OF March 1999

Janice M. Bickers
Notary Public

My Commission Expires: 2/16/2001

JANICE M. BICKERS
Notary Public, Berrien County, MI
My Commission Expires Feb. 16, 2001

/jmb

c: NRC Document Control Desk
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NRC Resident Inspector

ATTACHMENT A TO AEP:NRC:1260GH

EVALUATION OF PROGRAMMATIC ASPECTS OF CITED VIOLATIONS

This Attachment provides a discussion of programmatic weaknesses that have been identified through appropriate evaluations of the cited violations. I&M's response to the individual violations cited in the NRC letter dated October 13, 1998 (ref: 15) are discussed in Attachment B to this letter.

Background

Following receipt of the inspection reports that identified the specific violations (ref: 3,10,11,12,13) a pre-decisional enforcement conference was held on May 20, 1998 (ref: 14). During this meeting, I&M acknowledged the apparent violations, described its assessment of the root causes, and presented its corrective actions to address these issues. The cause evaluations and corrective actions acknowledged that there had been breakdowns in four fundamental programs. These programs are: the surveillance program, the design control program, the program and process for evaluating changes pursuant to 10CFR 50.59, and the corrective action program (CAP), including self-assessment capability. I&M also determined that CNP management had not established clear program ownership, ensured roles and responsibilities were communicated to program users, provided proper program oversight, and properly engaged with Performance Assurance (PA).

Subsequently, I&M revised the Restart Plan to incorporate assessment of 21 risk significant plant systems and initiate assessments of certain engineering programs and functional areas. The purpose of the plan revisions was to demonstrate that the extent of the conditions identified in the referenced Notice of Violation (NOV) had been defined and appropriately addressed prior to requesting NRC concurrence to restart the plant.

Following the guidance in the CNP Restart Plan (Revisions 0 through 4), the initial System Readiness Reviews, programmatic and functional area assessments were performed and numerous restart items were identified and incorporated into the restart work plan and schedule.

Shortly after arrival of the Senior Vice President-Nuclear Generation in the summer of 1998, a Safety System Functional Inspection (SSFI) of the Auxiliary Feedwater System was conducted to assess the efficacy of the initial System Readiness Reviews. This SSFI identified new design and licensing basis issues that had not been previously detected. During this same timeframe, an NRC inspection identified programmatic weaknesses in the CNP engineering program for monitoring motor operated valves. The Senior Vice President-Nuclear Generation responded by commissioning an assessment of engineering programs by a panel of industry experts. The resulting Engineering Issues Review Group final report identified additional system design and licensing basis issues, potential weaknesses in engineering programs and processes, and vulnerabilities with respect to the scope of systems reviewed during the prior System Readiness Reviews.

The following additional assessments and surveillances were initiated by the Performance Assurance Department and the new Vice President of Nuclear Engineering:

- Engineering Skills
- UFSAR
- Corrective Action
- Engineering Training
- Ice Condenser Project
- Surveillance Testing Program
- MOV Program (GL 89-10)
- Design Engineering
- 10 CFR 50.59 Program
- Design/Licensing Bases
- Calculation Revalidation

The conclusion reached by I&M in light of the results of these assessments was that it would be necessary to expand discovery efforts, employing more rigorous industry proven processes to accomplish the original objectives of the restart plan. The foregoing conclusions were discussed with the NRC at a public meeting held on December 22, 1998 (ref: 17). Shortly thereafter, senior management held a meeting to announce several work process standdowns and a moratorium on restart issue resolution to re-focus CNP personnel on preparations for commencing the expanded discovery effort the central focus being Expanded System Readiness Reviews (ESRR). As assessment findings became available senior management responded by initiating stop-work orders for work processes and programs such as:

- Engineering Training
- Calculations
- Design Control Process
- Root Cause/Apparent Cause Evaluations
- Component Evaluations
- 10CFR50.59 hold
- Ice condenser/ice basket installation

The stop work orders were put into effect to allow time for the organization to rebuild newer and better products and processes. As these orders are lifted, one-by-one, quality processes are being put in place to support resuming full-scale production work.

The selection of systems for ESRR project was primarily based on consideration of the Maintenance Rule, systems required for safe shutdown, significant attendant/support systems, and systems identified as having experienced a large amount of corrective maintenance in the past. Further, those systems selected for review were classified into two (2) levels based on their risk significance. The results of these reviews will be evaluated and classified and incorporated in the integrated restart schedule, which guides our continuing restart efforts. The ESRR process is an industry proven process that has been benchmarked with successful efforts at other facilities in extended outages. As part of the ESRR, I&M is completing a Licensing Basis Review (LBR) project to compile and validate current licensing basis information for each safety system being reviewed through the ESRR. The principal focus of the ESRR project is to provide reasonable assurance that the CNP key systems are capable of meeting their safety and accident mitigation functions. An overview of the CNP ESRR project plan was provided at the February 11, 1999 (ref: 18) public meeting with the NRC's 0350 restart panel.

The principal objectives of our restart efforts are to provide reasonable assurance that: (1) CNP safety systems are capable of performing their safety and accident mitigation functions, (2) issues identified in the programmatic and functional areas are appropriately addressed, and (3) plans for continuous improvement will have been developed. The restart plan document provides a top-tier management direction regarding the structure, content and methods for these restart actions. The CNP Restart Plan, Revision 5, has been approved and submitted.

Due to the broad scope of commitments and programmatic actions described in this response, a Project Manager, within the Regulatory Affairs Department, has been assigned to oversee the implementation of those actions. The responsibilities of the Project Manager include coordinating the development of action plans, schedules for commitments ensuring these are incorporated into the CNP integrated schedule and tracking completion of each commitment. Periodic updates will be communicated to CNP management, as part of our integrated schedule, and to NRC staff, as required.

Evaluation of Programmatic Aspects of Violation

The evaluation of specific violations discussed in Attachment B has resulted in the identification of thirteen programmatic areas requiring improvement. In support of the response to the specific violations cited in the NOV, it was deemed necessary to address the underlying common causes for the non-conformance.

The programmatic issues identified in Table 1 will be addressed through a combination of the CNP Restart Plan and Leadership Plans as described below. Table 1 below provides an overview of the relationship between programmatic weaknesses and the specific violation sections, which reference Attachment A for the corrective actions to prevent recurrence. The restart plan defines a methodical and comprehensive series of programmatic assessments and follow-up actions. A similar process is being applied to functional area assessments and corrective actions. Following completion of these assessments the identified programmatic and functional area improvements, including those addressing human performance deficiencies, will be addressed through the development of Leadership Plans for affected departments.

The Leadership Plans are being developed for programmatic and functional areas. The Leadership Plans are a management tool designed to capture those actions considered necessary for the long-term improvement of the department. Some action items in the Leadership Plan will be considered prerequisite to start-up and will therefore be identified and managed as Restart Items. A procedure is currently under development to support implementation of the Leadership Plans.

The key elements of the Leadership Plan provide for: (1) an issue statement which succinctly describes the problem or issue in very clear and definitive terms, (2) use of a corrective action system to address cause evaluation (3) action statements that focus on the activities to address the problem statement and (4) the effectiveness measures to assure the methods are

effective. Leadership Plans may also include self-assessment and audits to provide measurable feedback of the programmatic improvements.

In support of a comprehensive response to the NOV, it was deemed necessary to address the underlying causes that are common to each instance of non-conformance. CNP senior management will address management effectiveness and programmatic improvements through development of leadership plans for functional areas. The causes and corrective actions identified in Sections A through D of Attachment B to this response are categorized in relationship to thirteen specific programmatic areas requiring improvement.

The following table provides a summary of the areas of programmatic weakness impacting or contributing to the violations discussed in each of the sections in Attachment B.

Table 1 Common Programmatic Weaknesses

Areas of Programmatic Weakness	**Sec. A** Safety System Operability	**Sec. B** Corrective Action	**Sec. C** Design Basis	**Sec. D** 50.59 Program
1. CNP Management Oversight (CAP[1], PNSRC[2], NSDRC[3])	X	X	X	X
2. Corrective Action Program (including Self-Assessment)	X	X	X	X
3. Performance Assurance (QA and QC)	X	X	X	X
4. 50.59 Safety Evaluations Program			X	X
5. Operating Experience Review Program	X	X	X	
6. Instrument Uncertainties (Measurement Errors Consideration)	X	X	X	X
7. Control of Vendor Information	X	X	X	
8. Control of Contractors	X	X	X	
9. Technical Specifications Surveillance Program	X	X	X	
10. UFSAR[4] Program		X	X	X
11. Design and Licensing Bases including design control, drawings, and calculations)	X	X	X	X
12. Training and Qualification of Personnel	X	X	X	X
13. Procedure Process	X	X	X	X

1. Corrective Action Program (CAP), 2. Plant Nuclear Safety Review Committee (PNSRC), 3. Nuclear Safety and Design Review Committee (NSDRC), 4. Updated Final Safety Analysis Report (UFSAR)

Beyond this response, it is recognized that our restart plan and leadership plans will provide additional actions to improve our performance and provide the foundation to support restart of CNP and successful continued operation. Many of the attributes of our restart plan go beyond the scope of this response. Additionally, as part of the restart effort, performance indicators will be developed to provide management the means to assess the effectiveness of the programmatic plans as well as to ensure the program elements are achieving their desired goal. The remainder of this Attachment addresses the areas of programmatic weakness listed in Table 1.

1. CNP MANAGEMENT OVERSIGHT

A need to improved the rigor of CNP management oversight is necessary to address many of the issues identified in the NOV. Programmatic weaknesses associated with the Nuclear Safety and Design Review Committee (NSDRC), Plant Nuclear Safety Review Committee (PNSRC), and Condition Assessment Group (redefined as the Management Review Board and Event Screening Committee) have been identified and are being resolved as discussed below. Several initiatives are being initiated to address the issues identified during our assessment. These are:

- **Nuclear Safety and Design Review Committee (NSDRC):**

Issue: As part of a Corrective Action Program (CAP) assessment in December 1998, it was identified that the NSDRC was not performing oversight of the CAP. A Performance Assurance (PA) audit in July, 1998 had found that the NSDRC was not meeting its programmatic requirements The deficiencies included failures to fulfill independent oversight responsibilities, and properly maintain the NSDRC process. Additionally, there was a failure of subcommittees to identify declining trends in the effectiveness of the CAP and ensure that unreviewed safety question determinations were properly performed and reviewed in a timely manner.

Actions to Date: I&M has taken the following actions to date (1) Re-initiated the NSDRC meetings with the Senior Vice President-Nuclear Generation as chairman (2)obtained a Technical Specification (T/S) Amendment revising the membership and authorizing the relocation of the requirements to the Quality Assurance Program Document (QAPD) (3) established an initiative for the subcommittees to work off previous backlog issues. Additionally, the Independent Safety Review Group (ISRG) now reports as independent advisors to the NSDRC. The ISRG is composed of high level independent advisors whose charter is to provide an independent oversight function of select plant activities, that could impact public health and safety. In addition, the ISRG provides briefings to the Chairman, President and Chief Executive Officer of AEP.

Leadership Plan Attributes: A NSDRC Leadership Plan is being developed to guide reforms to the NSDRC to ensure that it performs an effective oversight of PNSRC, CAP, PA and other key operational activities. This plan will include: implementation of process improvements, restructuring the NSDRC operating manual, institutionalizing the membership with key independent personnel, providing dedicated staff support to perform administrative

functions, improving the subcommittee review processes, implementing the recent Technical Specification (T/S) amendment and resolving oversight review backlog issues.

- **Plant Nuclear Safety Review Committee (PNSRC):**

Issue: As a result of self-assessments, management observations and audits of the conduct of PNSRC, a number of issues were identified that are related to some of the violations cited in this report. Examples of these issues are: PNSRC membership controls, lack of clear expectations for members and presenters, training of members, and an absence of effectiveness measures.

Actions to Date: I&M has taken the following actions to date: reviewed the qualification requirements of the PNSRC membership, made adjustments to the membership, provided comprehensive training to the members and provided mentors to oversee the PNSRC functions.

Leadership Plan Attributes: A PNSRC Leadership Plan has been developed to guide reforms to the PNSRC ensuring that it performs an effective oversight of the plant activities that affect nuclear plant safety. The plan includes: (1) establishing clear ownership by the Plant Manager, (2) issuance of clear expectations, (3) improving the support infra-structure, (4) increasing the level of managers designated as committee members, (5) development of performance indicators, and (6) improving the training of members. This Leadership Plan, when fully implemented, will provide the foundation for effective oversight of plant activities. These actions have been initiated and are currently in progress.

- **Corrective Action Program Management Oversight**

Issue: A recent self-assessment identified that a contributing cause for the Corrective Action Program (CAP) ineffectiveness was inadequate program management oversight at CNP.

Actions Taken: As part of the CAP and to provide appropriate management oversight of the program, I&M recently instituted a management review board (MRB) to review condition reports to confirm reportability, operability, significance and assignment for resolution.

Leadership Plan Attribute: A CAP Leadership Plan is being developed to improve the overall effectiveness of the CAP process and to provide further management oversight. Specifically, the plan includes additional management oversight for review of the completed root cause evaluations through the implementation of the Corrective Action Review Board (CARB). The CARB will be responsible for review of: (1) root cause investigations, (2) sampling of apparent cause evaluations, (3) CAP trend analysis and (4) effectiveness reviews of completed corrective actions. When CARB is implemented, the MRB function will be eliminated and the remaining MRB responsibilities inclusive of confirming reportability, operability, significance and assignment for resolution will be included as part of the Plant Manager's morning meeting.

2. CORRECTIVE ACTION PROGRAM (Including Self-Assessment)

Issues: In addition to the deficiencies in the Corrective Action Program (CAP) described in the NOV, other internal and external assessments have identified additional CAP related issues. The problems identified are: (1) not identifying conditions adverse to quality, (2) failure to implement timely and appropriate corrective actions, (3) ineffective corrective actions and (4) marginal ability to track and trend conditions.

The root causes identified were:

- Lack of CNP management ownership for the CAP
- Inadequate training of root cause investigators
- An inappropriately high number of root cause investigations
- Low priority assigned to implementation of corrective actions;
- Poor resource allocation, and
- Staff effectiveness

Actions to Date: Recognizing the persistent nature of the deficiencies and the need for management and worker ownership, the CAP was one of the special focus areas selected for executive management oversight as the year 1999 began. Several actions have been taken:

- Recent management staff additions include personnel with CAP management experience
- The Corrective Action Department, created in 1998, was augmented with additional personnel to process the increased Condition Report generation rates and to develop and implement corrective actions and self assessment process changes
- The threshold for Condition Report initiation was lowered to include early identification of potential conditions
- Procedures were revised to streamline the process
- An industry proven Operability Determination process was implemented
- Management participation in review boards was improved
- A stop-work was maintained for root cause investigations until personnel could receive intensive training and mentoring
- A Self Assessment coordinator position has been staffed, with assistance from industry experts, to implement an upgraded self assessment process
- Event Screening Committee comprised of line department representatives, was established to review all CR's to determine significance level and assignment

Leadership Plan attributes: The CAP Leadership Plan will provide a bridge between past CAP deficiencies and a well running CAP. The CAP Leadership Plan along with focused CAP action plans for individual departments will address the following areas:

- Strengthening ownership of the CAP at all management levels

- Implementation of a Corrective Action Review Board (CARB) to augment root cause analysis
- Providing communications to positively impact worker participation in the CAP and obtaining feedback to measure culture improvements
- Streamlining the CAP process and implementing proven electronic CAP software
- Providing augmented staffing during the Expanded System Readiness Reviews and the Functional Area Assessments discovery for timely condition report processing and ensuring adequate quality of condition report closures
- Improving root cause and apparent cause analysis quality
- Implementing intrusive and timely condition cause review and trend analysis, providing linkage with comprehensive performance expectations, goals, and indicators
- Implementing a continuing corrective action effectiveness review process through Restart Programmatic and Functional Area Assessments, supervisor reinforcement, performance indicator analyses
- Improving formal functional self-assessments, benchmarking and phased audits and
- Implementing a self-assessment program to achieve a sufficiently self-critical and proactive process so that events or performance problems are prevented.

3. PERFORMANCE ASSURANCE PROGRAM (QA & QC)

Issue: Oversight initiatives did not identify the ice condenser problems and elevate them to the attention of CNP management. In addition, although similar issues were identified, oversight did not identify the extent of condition for the problems identified by the NRC architect/engineer (AE) team. A contributing factor to the oversight weaknesses included a lack of focus on systems/components' ability to meet design basis functions.

Actions to date: The following actions have been taken by Performance Assurance (PA) to ensure issues are identified, elevated to the proper management level, and driven to a timely resolution:

- Commenced the development of oversight skills to provide evaluation of systems such as the ice condenser. To date, a safety system functional inspection has been completed on the Auxiliary Feedwater System, which has demonstrated the ability to perform intrusive system evaluations. Currently, intrusive vertical slice assessments are being performed as part of the oversight of the expanded system readiness reviews.
- PA has developed and implemented a Field Observation process for quality assurance audit and quality control inspection resources which facilitates more performance-based and intrusive oversight efforts. The field observations provide prompt feedback to PA management on the intrusiveness of the oversight activities, and provide prompt feedback to line management on organizational, activity, and system/component performance. The field observations are periodically incorporated into a "Windows" report or a surveillance report that provides PA and line management feedback on performance in key areas. The reports identify problems that

are not being corrected, such that, CNP senior management can promptly respond.

- PA has supplemented its oversight staff and leadership with industry personnel that have a broad knowledge of oversight management and restart activities.

Leadership Plan Attributes: Performance Assurance is establishing a Leadership Plan, which will guide actions to be taken to develop a performance-based, intrusive oversight organization. The Leadership Plan will include, but is not limited to, the following actions:

- Development of oversight practices to ensure adverse conditions are evaluated with sufficient scope to ensure that the extent of the conditions are identified;
- Establishment of a follow-up process to ensure that significant problems are effectively resolved in a timely and thorough manner;
- Active participation with senior and mid-level line management on a frequent and regular bases to ensure identified issues are recognized and driven to timely and thorough resolution;
- Investigation, correction, and application of lessons learned from the failure of the QC program to identify missing screws in rebuilt ice condenser baskets;
- Improvement of the independence and intrusiveness to quality control oversight activities; and
- Performance of periodic self-assessments, some of which will include industry peers, to monitor the effectiveness of oversight activities.

4. 50.59 PROGRAM IMPROVEMENTS

Issue: Incomplete implementation of the 10 CFR 50.59 requirements resulted in inadequately performed safety screens and safety evaluations, thus resulting in unreviewed safety questions (USQ) not being identified. The causes of these problems are attributed to: (1) lack of clear procedural guidance regarding when to implement the 50.59 program requirements, (2) a lack of understanding of what constitutes a "change" and "design and licensing bases", (3) management expectations that were not consistent with industry standards, and (4) other barriers to ensure effective 50.59 products including inadequate training and procedural requirements.

Actions to Date: The CNP 50.59 program implementation procedure has been revised, training and qualification of personnel has been initiated and the procedure will become effective when sufficient numbers of personnel are qualified. Concurrent with this change, CNP implemented an in-line review function of safety reviews and evaluations by a newly formed engineering group, Nuclear Safety Assessment Team (NSAT), who reports to the Fuel, Safety and Analysis Director. NSAT is comprised of senior level personnel with many years of industry experience in the performance of 50.59 evaluations. The ownership of the 50.59 program has been assigned to Regulatory Affairs Department and implementation of the program to NSAT. An initial review for potential 50.59 bypass mechanisms was conducted by PA in March 1998. The PA review identified 23 potential 50.59 bypass mechanisms. These potential

50.59 bypass mechanisms have been reviewed and for those that did involve a 50.59 bypass, barriers were put in place to address the bypass. A follow-up review to evaluate effectiveness of these bypass barriers and other site processes that could potentially bypass the performance of 50.59 is presently being performed. Training is being provided to qualify selected personnel on the above changes.

Leadership Plan Attributes: The actions being taken to address the deficiencies include the creation of the Regulatory Affairs and Engineering Leadership Plans. Regulatory Affairs will guide improvements to the procedural guidance and training when determined to be appropriate through lessons learned and supplemental class training. The NSAT review group will provide real time effectiveness measures to include monitoring screening/evaluation products, performance feedback, management feedback, and oversight of products. I&M is taking actions to ensure that 50.59 bypass mechanisms are eliminated. I&M is currently evaluating the need to review previously performed 50.59 evaluations. Future effectiveness measures of the program will include self-assessments, audits, and supplemented third party reviews.

5. OPERATING EXPERIENCE PROGRAM

Issues: Application of industry operating experience at CNP has been identified as requiring centralization and strengthening. The effectiveness of a CAP is supplemented by an effective Operating Experience (OE) Program.

Actions to Date: Currently, the ESRR project teams are evaluating operating experience information to assess whether applicable industry issues have been adequately addressed at CNP for the respective systems being reviewed. CNP will be acquiring new OE program software compatible with the electronic CAP program.

Leadership Plan Attributes: The Regulatory Affairs Leadership Plan will include the implementation of the OE program. The new OE program will reside under the Regulatory Affairs Department - Compliance Licensing Section. The ingredients of the program will include benchmarking from other utilities that have proven effective OE programs. As needed, an assist visit from INPO may be requested to ensure that our CNP's OE program is aligned with the industry. Self-assessments and effectiveness reviews of the OE program will be periodically performed. The OE program will be integrated into the CAP through condition reports based on the screening performed by the OE group.

6. INSTRUMENT UNCERTAINTIES (Measurement Errors Consideration)

Issues: Control of instrument uncertainty calculations is a programmatic deficiency that impacted items referenced in the NOV. For example, refueling water storage tank calculations failed to incorporate considerations for piping system pressure loss and velocity effects on level indication instrumentation. Also, containment water inventory uncertainties were not incorporated into specifications, drawings, procedures and instructions. These conditions were caused by failure to establish ownership and

accountability, lack of clear roles and responsibilities, inadequate performance indicators, and inadequate effectiveness reviews.

Actions to Date: An expanded instrument uncertainty program has been developed and is described in reference 4. The scope of the program includes: (1) reactor trip and engineered safety features actuation system setpoints; (2) emergency and abnormal operating procedure operator decision points, (3) operations and test procedures used to verify T/S compliance, (4) plant performance data used in safety analysis and (5) setpoints for plant alarms associated with monitoring T/S compliance.

A Critical Parameter List has been issued. Administrative controls have been put in place to control application of instrument uncertainties, and to improve the Critical Parameter list as reviews progress. Approximately one-half of the new uncertainty calculations required have been issued or are near issuance. Procedure reviews for new Critical Parameters and the determination of the need to apply instrument uncertainties are currently underway. The program is the responsibility of Design Engineering.

Leadership Plan Attributes: As part of the Engineering Leadership Plan, the following actions are being taken to address the above issues:

- In accordance with the expanded instrument uncertainty program described above, the applicable Restart 0350 checklist item will be resolved prior to restart.
- The Instrument Uncertainty program will be reviewed by the System Readiness Review Board. Instrument uncertainties, setpoints and/or instrument bias effects will be assessed periodically to ensure program effectiveness. Part of these assessments will include evaluation of performance indicators.

7. CONTROL OF VENDOR INFORMATION

Issue: Control of vendor information was a contributor to several items noted in the NOV. Control of vendor information is a concern as it relates both to control of vendor technical information, to control the inputs and the results from calculations and analyses performed by contractors/vendors. The current vendor information control program is not effectively integrated into the an overall configuration management program.

Actions to date: A recent assessment finding identified that a weakness exists with maintenance of the active vendor re-contact program. This raised a concern regarding the control of nuclear steam system supplier (NSSS) vendor technical information manuals. A validation of NSSS vendor documents is being conducted in support of the ESRR. This validation is intended to assure that the NSSS vendor information in the AEP vendor document control system is current.

Review of vendor documents is being centralized in Design Engineering to assure that vendor document control is incorporated into the configuration

management program. Vendor manual control will be assessed as part of the Design Control Program Assessment that is being conducted by the Configuration Management section of Design Engineering. The assessment will analyze the Vendor Manual Control Program and identify areas for improvement. Control of vendor performed analyses is also included in this assessment as referenced under item 11.

Leadership Plan Attributes: Control of vendor information will be included in the design and licensing basis assessments described in item 11.

Items identified during the program assessment will be added to the Engineering Leadership Plan.

The vendor information control program will be reviewed by the SRRB.

8. CONTROL OF CONTRACTORS

Issues: Inadequate control of contractors was a contributor to several violations noted in the NOV. While the cited violations relate to work in the ice condenser, the issue of contractor control was approached from a broader perspective. The process for controlling contractor personnel at the CNP was assessed and the following types of problems were identified: (1) qualification and training of certain contract personnel was not adequate; (2) supervisory oversight of certain contract personnel was inadequate; and (3) management expectations regarding control and oversight of contract personnel were not communicated adequately.

Actions to Date: The following actions have been completed or are in progress to improve the CNP's program to control contractors:

Specific actions related to the ice condensers are provided in Attachment B.

- Maintenance personnel performed an assessment of the control of contractor processes. Weaknesses identified are being addressed in the Maintenance Leadership Plan.
- Plant and maintenance administrative documents were reviewed against industry standards and weaknesses identified are being addressed in the Maintenance Leadership Plan.
- Contract personnel's qualifications are being assessed to assure personnel meet appropriate standards.

Leadership Plan Attributes: In order to further improve the control and oversight of contractors at CNP, the following will be implemented.

- A common cause analysis will be performed on contractor issues at the CNP. The results of this analysis will establish a baseline for improvement efforts.
- An administrative procedure is being developed to address the process for validating the qualification of contract personnel.
- Plant level instructions will either be revised or developed as appropriate to clearly define management's expectations regarding control of contractors. These expectations include:

  - Selection of workers will be based on proper review of qualification attributes;
  - Line management will be accountable to ensure workers are adequately qualified to perform assigned tasks;
  - Worker performance will be properly monitored; and
  - Work will have adequate review for quality.
- Appropriate plant staff will be familiarized with the expectations associated with the control and oversight of contract personnel.
- Self-assessments and bench marking will be performed to identify improvement opportunities and monitor the effectiveness of the improvements.
- Ensuring proper project management controls, including pre-job briefings, are in place to ensure that performance of contractors meets I&M requirements and standards.

9. TECHNICAL SPECIFICATIONS SURVEILLANCE PROGRAM

Issues: The NRC and internal I&M assessments have identified surveillance programmatic issues that include: (1) inadequately interpreting plant design basis requirements into procedures; (2) not providing acceptance limits with suitable margin; (3) inadequate implementation of specific T/S requirements in surveillance procedures; and (4) improperly administered programmatic controls to manage surveillance test procedure changes. The causes include: (1) lack of a program owner and defined responsibilities; (2) unclear management standards and expectations, (3) poor alignment between implementing departments; and (4) vague procedural requirements which could potentially encourage the use of informal knowledge and "work-arounds" in lieu of a rigorous programmatic approach.

Actions to Date: A surveillance program owner and manager (T/S Surveillance Program Manager) position has been established, reporting to the Work Control Director. Further a verification of surveillance requirements for Modes 4, 5, and 6 was recently completed. This effort included a review of the surveillance schedule to validate that the required surveillances have been or are appropriately scheduled to satisfy the T/S surveillance requirements. This review identified weaknesses in the existing surveillance tracking system and lack of timely notification to management when a surveillance has the potential to exceed a T/S requirement. This issue is currently being addressed via a root cause investigation. Verification of T/S requirements for Mode 1 through 3 is currently continuing and will be completed by April 7, 1999.

Leadership Plan Attributes: The Leadership Plan will include: (1) creation of a detailed T/S surveillance database designed to align surveillance requirements to the specific implementing procedures, (2) a comprehensive adequacy review of surveillance testing procedures, (3) an assessment of the training and qualifications of personnel performing surveillance testing, and (4) appropriate corrective and preventive actions originating from root cause investigation. The CAP will be used to trend the effectiveness of the surveillance program. The long-range plan will likewise have performance indicators developed as part of the plan development to measure implementation success. As an element of the long-range plan, routine

effectiveness assessments will be incorporated into the process documents to provide directions for regular reviews of the program.

10. UPDATED FINAL SAFETY ANALYSIS REPORT (UFSAR) PROGRAM

Issues: Several of the issues documented in the NOV address deficiencies with the UFSAR. Specifically, the NRC indicated that information in the UFSAR did not accurately reflect the plant configuration and/or current evaluations and analyses. The deficiencies in the UFSAR originated from programmatic issues with the control of information in the UFSAR as well as identification and translation of design and licensing basis information into the UFSAR.

Actions to Date: An assessment of the UFSAR update process was recently performed which identified several areas for improvement. In response to this assessment, the UFSAR update procedure was revised to upgrade the process to clearly identify the roles and responsibilities of the program owner versus user of the process and clarification for initiating, processing, and submitting the UFSAR updates, including reviews by the Design Authority (Technical Content Owner). A Licensing Basis Review (LBR) project has been initiated to compile current licensing basis information for each safety system being reviewed through the ESRR.

Leadership Plan Attributes: The Regulatory Affairs Leadership Plan will align UFSAR review and verification efforts to the LBR and ESRR. The LBR and ESRR approach is an industry proven process that has been benchmarked by successful efforts at other facilities in extended outages. The ESRR methodology is intended to provide reasonable assurance that key systems will perform their accident mitigation functions. UFSAR discrepancies identified during these efforts will be evaluated and UFSAR changes implemented consistent with the conclusions of the ESRR. Establishment of a controlled electronic UFSAR will provide the capability to communicate UFSAR changes to personnel on a regular basis to provide assurance that 50.59 evaluations are performed on current UFSAR information. This electronic version will be made available for use by plant personnel prior to restart from the current outage. I&M will submit to the NRC a UFSAR update within 30 days after achieving Mode 2 for each unit. Guidance for the content and level of detail within the UFSAR will be developed and made available to CNP staff.

To address long term corrective actions regarding the control of information in the UFSAR, the Leadership Plan will also contain elements that will continue to strengthen the interfaces between UFSAR change process and other change processes (e.g., calculation, modification, procedure change, and license amendment, etc.) to provide assurance that UFSAR changes will be identified, reviewed and implemented as required. These improvements will be integrated into normal plant configuration and control processes.

11. DESIGN AND LICENSING BASIS

Issues: Control of design and licensing basis is a programmatic deficiency that impacted the items referenced in the NOV. For example, (1) plant processes that may have bypassed design change requirements, (2) complete and reliable design and licensing basis information may not be adequately

available or known to those performing safety related activities, and (3) design control responsibilities were widely scattered across several engineering and non-engineering organizations. These conditions were caused by failure to establish ownership and accountability, lack of clear roles and responsibilities, inadequate performance indicators, and inadequate effectiveness reviews.

Actions tc Date: The Design Engineering Department was established as the Design Authority for managing the overall effort of the integrated configuration management program.

Leadership Plan Attributes: The Engineering Leadership Plan includes the following actions to correct and preclude recurrence of the identified violations:

- Establish a Design Basis Authority within the Design Engineering Department.
- Establish a new design control process. The generic processes that are encompassed by the Design Control Program are as follows:
  - Design Change Initiation
  - Design Changes
  - Design Change Notice (Deviations)
  - Design Standards
  - Design Input
  - Design Verification
  - Design and Licensing Basis
  - Calculations
  - Specifications
  - Design Document Control
  - Vendor Technical Documentation
  - Testing
  - Self-assessment
- Create a configuration management program that controls design and licensing basis information and incorporation of the design and licensing basis into operating and maintenance procedures.
- Establish Design and Licensing Basis documentation through the performance of system and programmatic assessments detailed in the restart plan, for example, the system assessments under the ESRR and programmatic assessments for the UFSAR Update, LBR, and Emergency Operating Procedures Project.

12. TRAINING AND QUALIFICATION OF PERSONNEL

Issue: Qualification of workers must be based on a program that follows a systematic approach to training. Recent evaluations conducted on accredited training programs, including Operations, Maintenance, Chemistry, Radiation Protection, and Engineering, identified the following common weaknesses:

- Lack of sufficient line and training management monitoring, direction, and oversight
- Inadequate instructor continuing training program
- Training records do not adequately document processes and activities
- Processes guiding the direction and administration of the on-the-job qualification programs are ineffective

Actions to Date:

- CNP implemented three levels of training monitoring, direction and oversight for accredited programs. The first is the Curriculum Development Committee that determines both initial and continuing training content. The second is the Program Review Committee that provides oversight for an entire discipline such as Operations or Maintenance. The third is the Senior Training Council, chaired by the Site Vice President, which meets at least quarterly to status and monitor plant training and qualification programs. All three committees include both line and training management.
- The Training Department conducted four days of instructor continuing training in late 1998 that was based upon correcting self-identified instructor performance weaknesses. Further, instructors must perform at least 40 hours of in-plant proficiencies per year.
- Training records for maintenance, radiation protection, and chemistry were quality checked to provide assurance that the hard copy records and the company approved training attendance database were aligned and that workers assigned independent tasks are qualified to perform that work.
- A three-month project to upgrade the training process documents was initiated in January 1999. This includes an upgraded process for qualifying on-the-job qualification evaluators.
- A Maintenance Training Intervention was launched to improve both first line supervisor and worker understanding of management expectations. This effort includes knowledge and proficiency evaluations.

Leadership Plan Attribute: A Training Leadership Plan is being developed which will address each of these weaknesses and incorporate appropriate solutions to ensure continued improvement. Major areas identified in the plan include:

- Line and training manager oversight and direction through implementation of training committees, observations of training, and a thorough self-evaluation program
- Training and qualification records management
- Personnel roles and responsibilities within the systematic approach to training process for both line and training personnel
- Reinforce a "nuclear safety culture" for site personnel
- Training support of the line training and qualification activities

- Maintaining a living Integrated Site Training Schedule

Self-evaluations and effectiveness reviews of the training and qualification programs are periodically conducted.

13. PROCEDURE PROCESS

Issues: Within the cited violations, there are examples of procedural issues resulting from inadequate procedure development. Procedure program self-assessments conducted by I&M and experienced industry personnel identified the following types of problems: (1) the American Electric Power Nuclear Organization (AEPNO) procedure series was not adequately maintained, (2) adherence to administrative procedure requirements was not adequate, (3) a decentralized procedure process strategy hindered effective procedure process ownership and management, (4) and some procedures are overly complex with high administrative burden.

The causes for these problems include failure to ensure procedural requirements are met, inadequate procedure process ownership, and program interface defects between procedure, design and licensing basis, and 50.59 programs.

Actions to Date: The following actions have been completed or are in-progress to improve procedure program performance: (1) eliminate AEPNO procedures through integration with plant procedures, (2) establish clear management expectations for procedure adherence, (3) establish a clear procedure process owner, (4) implement a multi-disciplined team to improve the procedure process and monitor ongoing performance, (5) redesign the procedure process to reflect best industry practice and correct program interface deficiencies, (6) conduct familiarization training for appropriate personnel on procedure development, review, and approval, and (7) centralize procedure process administration by creating a permanent procedure group.

Leadership Plan Attributes: The Document Control Leadership Plan is being developed to include the following to correct procedure program issues:

- Eliminate AEPNO procedures through integration with plant procedures
- Centralize procedure process administration by creating a permanent procedure group
- Ensure effective procedure process implementation through ongoing monitoring
- Develop and implement a procedure writer training and qualification program
- Redesign and rewrite AEPNG administrative procedures to improve processes and reduce administrative burden.

LIST OF REFERENCES

1. September 18, 1997 AEP:NRC:1260G1, Donald C. Cook Nuclear Plant Units 1 and 2, License Nos. DPR-315/58 AND DPR-316/74, Summary of Restart Items

2. September 19,1997 CAL No. RIII-97-011, Confirmatory Action Letter

3. November 26, 1997 Subject: Donald C. Cook, Units 1 & 2 Design Inspection (NRC Inspection Report No. 500-315, 316/97-201)

4. December 2, 1997 AEP:NRC:1260G3, Donald C. Cook Nuclear Plant Units 1 and 2, Response to Confirmatory Action Letter No. RIII 97-011,NRC Architect Engineer (AE) Design Inspection August 1997

5. December 16, 1997 Public Meeting, Information Related to the Cook Nuclear Confirmatory Action Letter

6. December 22, 1997 Public Meeting, Information Related to the Cook Nuclear Plant 10 CFR 50.59 Program

7. December 24, 1997 AEP:NRC:1260G4, Donald C. Cook Nuclear Plant Units 1 and 2, Confirmatory Action Letter (CAL) Supplemental Response

8. December 31, 1997 AEP:NRC:1260G5, Donald C. Cook Nuclear Plant Units 1 and 2, Response to the Request for Additional Information Related to 10 CFR 50.59 Program Questions Raised During the DECEMBER 22, 1997 Public Meeting

9. January 8, 1998 AEP:NRC:1260G6, Donald C. Cook Nuclear Plant Units 1 and 2, Information Presented During January 8, 1998, Public Meeting

10. April 9, 1998 Subject: NRC Inspection Report No. 50 315/97017(DRP); 50 316/97017(DRP) Regarding Fibrous Material in Containment

11. April 10, 1998 Subject: NRC Inspection Reports 50-315/98005; 50-316/98005 Nonroutine inspection focused on the conduct of past surveillance testing, corrective actions and maintenance on the design basis for the ice condenser in each Unit.

12. May 7, 1998 Subject: Inspection Report No. 50-315/98004(DRS); 50-16/98004(DRS) and Confirmatory Action Letter (CAL) No. RIII-97-011 Validation

13.	May 7, 1998	Subject: NRC Inspection Report No. 50-315/98009(DRS); 50-316/98009(DRS) The purpose of this inspection was to determine the safety significance and regulatory impact of 34 concerns identified during the 1997 Architectural and Engineering (AE) inspection (50-315/97201; 50-316/97201)
14.	May 20, 1998	Pre-decisional Enforcement Conference conducted by Mr. James Caldwell, Deputy Regional Administrator, other members of the Region III staff, and Headquarters staff, via video conference, on May 20, 1998. The subject of this conference was the apparent violations at Donald C. Cook, Units 1 and 2, identified in NRC letters dated April 9, 1998 (50-315/97017; 50-316/97017), April 10, 1998 (50-315/98005; 50-316/98005), and May 7, 1998 (50-315/98004; 50-316/98004; 50-315/98009; 50-316/98009) involving breakdowns in four programmatic areas.
15.	October 13, 1998	Notice of Violation and Proposed Imposition of Civil Penalty - $500,000 (NRC Inspection Reports 50-315(316)/97201(NRR), 50-315(316)/97017(DRP), 50-315(316)/98004(DRS), 50-315(316)/98005 (DRS) and 50-315(316)/98009 (DRS))
16.	October 14, 1998	Technical Meeting related to containment sump performance methodology
17.	December 22, 1998	Public Meeting, 0350 Process for Cook Nuclear Plant
18.	February 11, 1999	Public Meeting, 0350 Process for Cook Nuclear Plant

ATTACHMENT B TO AEP:NRC:1260GH

REPLY TO NOTICE OF VIOLATION DATED OCTOBER 13, 1998
RESPONSE TO THE CITED VIOLATION

Docket Nos. 50-315 and 50-316

Reply to Notice of Violation
Enforcement Actions EA 98-150, 98-151, 98-152 and 98-186
NRC Inspection Reports 50-315(316)/97017; 98004; 98005; 98009
Donald C. Cook Nuclear Power Plant, Units 1 and 2

Attachment B provides the I&M responses to the individual violations cited in the NRC letter dated October 13, 1998 (ref. 15). Attachment A describes the programmatic weaknesses identified through evaluations of the individual responses and the corrective actions that when implemented are intended to prevent recurrence of the individual violations.

A. Violations Related to Performance of Inspection and Test Activities for Continued Availability and Operability of Safety Systems

A.1.a. Restatement of the Violation

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

Contrary to the above, as of February 27, 1998, the Licensee had not provided instructions appropriate to the circumstances for an activity affecting quality in that visual examinations of ice condenser flow passages using procedure 12 EHP 4030 STP.250 (Revision 1), "Inspection of Ice Condenser Flow Passages," failed to detect ice blockages in the flow passages. Specifically, this procedure lacked instructions to perform visual examinations from accessible areas above and below the ice condenser flow passages. Further, the procedure permitted an arbitrary flow passage selection process to be used by the Test Engineer that resulted in non representative samples being examined.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Procedure 12 EHP 4030 STP.250 did not include appropriate requirements, including details of inspection methodology and sample selection.

2. The writer of the procedure, the reviewers, and personnel conducting surveillances pursuant to the procedure displayed a lack of understanding of requirements for surveillance procedure content.

3. There was inadequate training for personnel writing this and other surveillance procedures.

4. Collectively, the violations related to the ice condensers resulted from a programmatic weakness in the management of the ice condenser systems in that design basis requirements were not adequately translated and assignments of responsibilities were inappropriate.

Corrective Steps That Have Been Taken and Results Achieved

1. The ice condensers for both units have been completely thawed, clearing the flow passages (channels) of any ice blockage.

2. Surveillance procedure 12 EHP 4030 STP.250 has been placed on administrative hold, pending issuance of a new Maintenance Department surveillance procedure for the ice condenser flow path surveillance, which will be consistent with the proposed Technical Specification (T/S) revision.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. The bases for the ice condenser T/S surveillances will be reconstituted and appropriate information will be incorporated into design basis documents and plant procedures to further define information such as margins, assumptions, and uncertainties. Ice condenser surveillance procedures will be rewritten based upon the reconstituted bases and will include information and instructions necessary to provide appropriate guidance on inspection methodology, including inspections from above and below the flow passages. Training will be developed and administered to qualify workers who perform flow channel surveillances. This training is intended to ensure the workers have a clear understanding of requirements and effectively implement the surveillance requirements.

2. The Maintenance organization will be principally responsible for development of the surveillance procedures and implementation of the surveillance and maintenance requirements, including supervision of the labor force. The shift of the direct supervisory oversight of the surveillance labor force to the Maintenance organization will permit the Engineering staff to maintain responsibility for and focus on maintenance of the design basis requirements of the ice condenser system and analysis of surveillance data. The Engineering staff will review future changes to ice condenser surveillance procedures to assess technical adequacy. The procedure writers will receive training on procedure development, which includes guidance on appropriate procedure content.

3. A T/S revision was submitted to the NRC for review and approval on December 3, 1998. This proposed revision changes the surveillance for ice condenser flow channels to provide a more conservative sampling approach for initially assessing the potential for flow channel blockage and to specify criteria for assessing the extent and significance of any observed blockage when compared to the maximum blockage allowed by analysis. In addition, the bases will be revised to define a flow channel and the reason for the maximum allowable blockage.

4. Direction for the method of selection of the flow passages to be inspected will be developed. Selection of the passages to be inspected will be accomplished to produce a representative sample.

5. A Life Assurance Plan for the ice condensers is being developed as part of the ongoing Ice Condenser Refurbishment Project. This document will provide a legacy from the project and will define programs, procedures, maintenance practices and organizational elements necessary to provide reasonable assurance that the ice condensers are maintained in good

condition, in accordance with the design and licensing basis for the remaining life of the plant. The document will also include key "lessons learned" from resolution of the various ice condenser issues. Periodic self-assessments will be scheduled to provide assurance that symptoms which led to the degradation of the ice condensers are not recurring. This plan is common to all the ice condenser issues.

6. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condenser operable for each unit.

A.1.b. Restatement of the Violation

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

Contrary to the above, as of February 27, 1998, the Licensee failed to ensure that instructions appropriate to the circumstances for an activity affecting quality were provided in procedure 12 EHP 4030 STP.211 (Revision 2), "Ice Condenser Surveillance." Specifically, step 4.8 of procedure 12 EHP 4030 STP.211 authorized unpinning up to 60 ice baskets in Modes 3 and 4 without an analysis to determine if the integrity of the containment structure was affected with the ice condenser in this condition.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. The procedure step permitting unpinning first appeared in procedure 12 EHP 4030 STP.211 in November 1975. A search of historical records by I&M and Westinghouse did not identify the authorization of the procedure change or technical basis for the change.

2. The process of preparation, review, and approval of procedure 12 EHP 4030 STP.211 did not identify that the unpinning of baskets step had no identified technical basis.

Corrective Steps That Have Been Taken and Results Achieved

Surveillance procedure 12 EHP 4030 STP.211 was revised to delete the step that allowed the unpinning of the ice baskets. Subsequently, this procedure has been placed on administrative hold pending issuance of a new Maintenance Department surveillance procedure.

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to A.1.a., above.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condenser operable for each unit.

A.1.c. Restatement of the Violation

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

Procedure No. 01-OHP 4030.001.002 (Revision 14), "Containment Inspection Tours," defines how to perform containment inspections, an activity affecting quality.

Contrary to the above, as of September 11, 1997, 01-OHP 4030.001.002 was not appropriate to the circumstances because it did not require an individual to look for insulation that could restrict flow to the containment recirculation sump. Specifically, Fiberfrax insulation material was installed in 1985, 1986, and in 1995 during maintenance outages, and Temp-mat insulation was installed in 1989. The Licensee made numerous containment inspections during the last 12 years that never identified the need to remove fibrous insulation material. On September 11, 1997, fibrous insulation material that could restrict flow to the containment recirculation sump was found installed in the Unit 2 containment.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. The review of NRC and industry notices regarding the potential for recirculation sump blockage was not performed with sufficient engineering rigor. These evaluations were narrow in focus and failed to evaluate all of the concerns raised by the Notice or Bulletin. The potential for fibrous material (used in installing cable tray fire stops or as fibrous thermal insulation) to block the sump was not adequately considered, in part, because the design and licensing basis of the sump was that the screen must still function with 50% of the surface area completely blocked.

2. There was also a lack of recognition of the inside of containment as a system requiring strict foreign material exclusion (FME). The containment closeout procedure did not specifically address exposed fibrous material conditions.

Corrective Steps That Have Been Taken and Results Achieved

Refer to section C.2.d

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to section C.2.d

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

A.2.a. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents.

Contrary to the above, as of February 27, 1998, the Licensee had failed to adequately incorporate the acceptance limit of design document WCAP-11902, "Reduced Temperature and Pressure Operation for Donald C. Cook Nuclear Plant Unit 1 Licensing Report," dated October 1988 into test procedure 12 EHP 4030 STP.250, "Inspection of Ice Condenser Flow Passages." Specifically, test procedure 12 EHP 4030 STP.250 incorporated the 15 percent uniform ice condenser flow blockage acceptance criterion of WCAP-11902 without accounting for measurement errors, which when considered in the procedure, would result in a flow passage blockage acceptance criterion in excess of that previously analyzed.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Surveillance procedure 12 EHP 4030 STP.250 did not provide the necessary direction and guidance to comply with the Technical Specification criterion for flow passage blockage. Specifically there was insufficient procedural guidance to ensure representative samples of flow passages were examined, quality measurement techniques (specifically accounting for measurement errors) were used, and lighting aids were used properly during inspections.

2. The writer of the procedure, the reviewers, and personnel conducting surveillances pursuant to the procedure displayed a lack of understanding of the requirements for surveillance procedure content.

3. There was inadequate training for personnel writing this and other surveillance procedures.

Corrective Steps That Have Been Taken and Results Achieved

1. The ice condensers for both units have been completely thawed, clearing the flow passages (channels) of any ice blockage.

2. Surveillance activities for ice condenser flow channel inspections were suspended to address issues with the methods and procedures for obtaining and accepting the data from the surveillances.

3. Surveillance procedure 12 EHP 4030 STP.250 has been placed on administrative hold, pending issuance of a new Maintenance Department surveillance procedure for the ice condenser flow path surveillance, which will be consistent with the proposed T/S revision.

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to A.1.a., above

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condenser operable for each unit.

A.2.b. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents.

Contrary to the above, as of February 27, 1998, the Licensee had failed to adequately incorporate the analyzed acceptance limit (Westinghouse evaluation, "Indiana Michigan Power D.C. Cook Nuclear Power Plant Ice Condenser Seismic Load Study New Ice Basket Design," dated February 28, 1990) for the combined ice basket with ice weight (gross ice basket weight) into Attachment 4, "Ice Condenser Basket Work Sheet," of test procedure EHP 4030 STP.211, "Ice Condenser Surveillance," Revision 2. Specifically, the 1877 lb. acceptance criterion used in the procedure did not account for measurement errors, which when considered, would result in a maximum gross ice basket weight acceptance criterion in excess of that previously analyzed.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Procedure EHP 4030 STP.211 did not appropriately account for measurement error or equipment accuracy in the load cells used to weigh baskets.

2. The writer of the procedure, the reviewers, and personnel conducting surveillances pursuant to the procedure displayed a lack of understanding of requirements for surveillance procedure content.

3. There was inadequate training for personnel writing this and other surveillance procedures.

Corrective Steps That Have Been Taken and Results Achieved

1. The Ice condensers for both units have been completely thawed, eliminating any ice baskets that may have exceeded the 1877 lb. max gross ice basket weight acceptance criteria.

2. Surveillance activities for ice basket weighing were suspended due to deficient methods/procedures for obtaining/accepting the data from the surveillance.

3. Surveillance procedure 12 EHP 4030 STP.211 has been placed on administrative hold pending issuance of a new surveillance procedure.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. Refer to Section A.1.a., above.

2. A new surveillance procedure is being written, that is intended to prevent exceeding 1877 lbs. for a basket. The surveillance procedure will include an administrative control for maximum weight of ice and basket, that will include allowance for instrument tolerances.

3. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condenser operable for each unit.

A.3. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion VII, "Control of Purchased Material, Equipment, and Services," requires, in part, that the effectiveness of the control of quality by contractors shall be assessed at intervals consistent with the importance, complexity and quantity of services.

Contrary to the above, the Licensee had not assessed the effectiveness of the control of quality by the ice basket weighing contractors performing ice condenser surveillance testing since the 1995 refueling outage. Numerous ice baskets sustained potentially detrimental damage. Specifically, on March 3, 1998, November 12, 1997, and February 28, 1997, the Licensee attributed ice baskets damage (documented in CR 98-388, CR 97-3244, CR 97-0544) to weighing practices and associated activities performed by contractors during ice condenser surveillance testing.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Control of contractors performing work on the ice condensers was inadequate, as was supervisory oversight by I&M personnel.

2. Surveillance and maintenance practices were not adequate to control the material condition of the ice condensers.

3. Training of contractors was not fully effective.

4. There was no definition of detrimental damage to ice baskets to assess whether observed damage resulted in an unacceptable condition.

5. Oversight and assessment by Performance Assurance (PA) concerning control of quality by contractors performing surveillances was inadequate. This was compounded by inadequate management oversight of the resolution of Condition Reports. CNP management and PA failed to assure that identified conditions adverse to quality concerning ice basket damage were adequately assessed and proper corrective actions taken.

Corrective Steps That Have Been Taken and Results Achieved

The ice condensers for both units have been completely thawed to allow inspection of the 1944 ice baskets in each unit, for the purpose of identifying and correcting, by repair or replacement, damaged baskets.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. The responsibility for oversight of production work, maintenance, and surveillance activities is being transferred from Engineering to the Maintenance Department. This will provide personnel skilled in supervision of production workers to provide oversight of contract labor.

2. The procedures used to guide maintenance and surveillance activities for the ice condenser are being upgraded and rewritten for use within the Maintenance department. The upgraded procedures will contain improved guidance on maintenance and surveillance activities, which is intended to preclude future damage to ice baskets.

3. The training programs for ice condenser personnel are being upgraded. The upgraded training includes improved guidance on proper techniques to avoid basket damage. Training will stress intended configuration of the ice condenser and design function of each major component. Training will also emphasize that if not in the proper configuration or damaged, the ice condenser may not be able to perform its design function. Training will provide guidance on completing the corrective action task of escalating the identified problem to supervision/management and documenting it in a condition report so that corrective actions can be identified and implemented.

4. A definition of detrimental damage was developed and is being used as an acceptance criterion for judging whether observed ice basket damage requires repair. The definition will be incorporated into T/S surveillance procedures and supporting design basis documents. Damage beyond the threshold of detrimental damage, which may occur in the

future, will be addressed in accordance with the design and licensing basis requirements.

5. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condenser operable for each unit.

A.4. Restatement of the Violation

T/S 4.6.5.1.d, "Ice Condenser - Ice Beds," requires, in part, that the Licensee visually inspect accessible portions of at least two ice baskets from each 1/3 of the ice condenser and verify that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage.

Contrary to the above, on March 20, 1997, the Licensee visually inspected the accessible portion of ice basket 6-3-4 (a basket selected for the T/S 4.6.5.1.d inspection) but failed to verify the basket was free of detrimental structural wear, cracks, corrosion or other damage in the applicable surveillance procedure 12 EHP 4030 STP.212 (Revision 0) "Ice Condenser Basket Inspection." Specifically, the Licensee failed to identify structural damage at ice basket 6-3-4 lower rim assembly that was accessible.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Procedure 12 EHP 4030 STP.212 did not incorporate appropriate requirements into ice basket inspection including details of inspection methodology.

2. The writer of the procedure, the reviewers, and personnel conducting surveillances pursuant to the procedure displayed a lack of understanding of requirements for surveillance procedure content.

3. There was inadequate training for personnel writing this and other surveillance procedures.

Corrective Steps That Have Been Taken and Results Achieved

1. The ice condensers for both units have been completely thawed to allow inspection of the 1944 ice baskets in each unit, for the purpose of identifying and correcting, by repair or replacement, damaged baskets.

2. Surveillance procedure 12 EHP 4030.STP.212 is on administrative hold pending issuance of the new surveillance procedure. Surveillance procedure 12 MHP 4030.STP.055, "Ice Basket Inspection," will be issued to replace the earlier surveillance procedure. The new procedure will

require a detailed inspection of ice baskets including the lower basket section, and will provide appropriate instructions and acceptance criteria.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. Refer to A.1.a. and A.3., above.

2. Training will be developed and administered to qualify workers who perform ice basket inspection surveillances. The training is intended to ensure the workers have a clear understanding of requirements and effectively implement the surveillance requirements.

3. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condenser operable for each unit.

A.5. Restatement of the Violation

T/S Surveillance Requirement 4.6.5.1.b.2 requires, in part, that the Licensee weigh a representative sample of at least 144 ice baskets and verify that each ice basket contains at least 1333 pounds of ice.

Contrary to the above, during the 1995 refueling outage, the Licensee failed to select a representative sample of ice baskets to meet T/S 4.6.5.1.b.2 for the ice weight surveillance. The selected ice baskets constituted a non-representative sample, in that azimuthal row 5 ice baskets were excluded, which were lighter than other azimuthal rows (e.g., contained a significant percentage of ice baskets below the 1333 pounds of ice required). Further, the selection was non-representative in that the same ice baskets were repetitively weighed particularly in radial rows 8 and 9 (please note, Inspection Report 98005 identified the radial rows as 1 and 9) during sequential surveillance intervals.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. The ice condenser surveillance procedure, did not provide adequate direction for obtaining a representative sample of ice baskets and did not caution against repeating the same baskets for each performance of the surveillance. The procedure did not include software program interface or direction for usage of the software program. The acceptance criteria associated with minimum ice mass was based upon the statistically derived averages of the weighed iced baskets (for which the software program was in error). The surveillance procedure did not provide a minimum allowable ice mass for individual ice baskets.

2. The existing weighing methodology and software program for selection and analysis of ice basket weights ignored some low weight ice baskets and did not take into account increased sublimation of ice in ice baskets along the containment walls. The software failed to adequately translate some T/S requirements into software code.

3. Personnel performing surveillance activities did not adequately understand the T/S surveillance requirements.

Corrective Steps That Have Been Taken and Results Achieved

The ice condensers were completely thawed, correcting any maldistribution of ice.

Corrective Steps That Have Been Taken to Avoid Further Violations

1. Refer to violation response A.1.a., above.

2. Criteria for assuring a representative sampling of ice basket weights will be established and incorporated into the surveillance procedures. The surveillance methodology as well as the selection and acceptance criteria for individual ice baskets will be reviewed for compliance with both T/S and the analytical bases of the ice condenser system.

3. The analytical tools such as computer software will be revised or replaced and subjected to validation and verification. The selection process for baskets to be weighed will be established and incorporated into procedures.

4. Training will be developed and administered for personnel who perform surveillances and utilize analytical software.

5. The reloading of the ice condenser will provide reasonable assurance of an initial load of uniformly distributed ice, consistent with design basis requirements.

6. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condensers operable for each unit.

B. Violations Relating to Implementation of a Corrective Action Program to Assure Conditions Adverse to Quality are Effectively Corrected

B.1. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion XVI requires, in part, that measures shall be established to ensure that conditions adverse to quality such as defective material and non conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, as of January 25, 1998, the Licensee failed to identify or implement corrective action for the failed ice basket sheet metal screws, a condition adverse to quality, which had been repeatedly found in the ice melt system filters for both units since 1991.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation:

1. Corrective Action Program deficiencies resulted in a failure to emphasize the importance of identifying, documenting and trending repeated occurrences of conditions adverse to quality, investigating the root cause and implementing corrective actions. As a result, there was a failure of personnel to document repeated occurrences of failed ice basket sheet metal screws and other ice condenser damage and to take appropriate actions to identify and correct the root cause(s).

   A contributing factor was that the oversight of the Corrective Action Program by the Performance Assurance (PA) Department was not fully effective. Oversight initiatives did not identify the repeated occurrences of the broken screws and other ice condenser damage and elevate them to the attention of site management so that appropriate corrective actions were performed.

   An additional contributing factor was inadequate management oversight of the resolution of Condition Report corrective actions.

2. Prior to 1998, there had been no analysis to assess the significance of missing ice basket screws. Failure to adequately maintain and understand the ice condenser design basis resulted in a failure to recognize the potential safety significance of the broken screws and specify an appropriate acceptance criterion in T/S surveillance procedures.

3. Broken screws occurred as a result of work practices that caused excessive loads on the screws. Examples include excessive lifting forces on frozen baskets and poorly distributed forces that result from inappropriate weighing techniques, such as prying of the baskets.

4. The potential significance of the broken screws, missing screws or other damage was not conveyed to ice condenser personnel during training. Consequently, personnel involved with the maintenance and surveillance of the ice condensers failed to recognize that the broken and missing screws represented a potential challenge to the integrity of the ice baskets.

Training failed to stress the necessity for documentation of ice condenser deficiencies via the Corrective Action Program. Consequently, personnel incorrectly assumed that the repeated occurrences of broken or missing screws did not require documentation in a condition report.

Corrective Steps That Have Been Taken and Results Achieved

1. The ice condensers for both units have been completely thawed to allow inspection of the 1944 ice baskets in each unit, for the purpose of identifying and correcting, by repair or replacement, damaged baskets, including missing or damaged screws.

2. Initial training for ice condenser personnel has been presented as a part of the ice condenser refurbishment effort. Additional training improvements are in progress.

Corrective Steps That Will Be Taken to Avoid Further Violation

1. The bases for the ice condenser T/S surveillances will be reconstituted and appropriate information will be incorporated into design basis documents and plant procedures to further define information such as margins, assumptions, uncertainties, and required qualifications for personnel performing surveillances. Ice condenser surveillances include inspections for ice basket damage. Analyses have been performed to define allowable levels of ice basket damage, including criteria for ice basket screws. Ice condenser maintenance and surveillance procedures will be rewritten based upon the reconstituted bases. The ice basket damage criteria will be incorporated into ice basket inspection surveillance procedures.

2. To prevent recurrence of the broken screws (and other basket damage), the upgraded procedures discussed above will also contain improved guidance on maintenance and surveillance practices. The improved guidance is intended to preclude future damage to ice baskets during weighing and maintenance. This guidance will include the use of improved tools, such as three arm grapples with flat head pins to distribute loads more evenly at the top rim of the basket. Distortion of the top rim has resulted in broken ice basket screws in the past.

3. The training programs for ice condenser personnel are being upgraded. The upgraded training includes improved guidance on proper techniques to avoid basket damage. Training will stress intended configuration of the ice condenser and design function of each major component. Training will also emphasize that if not in the proper configuration or damaged, the ice condenser may not be able to perform its design function. Training will provide guidance on completing the corrective action task of escalating the identified problem to supervision/management and documenting it in a condition report so that corrective actions can be identified and implemented.

4. Ice baskets are being inspected and repaired or replaced, to ensure that any identified basket damage is within established tolerances. As a point of information, recent re-inspections of previously repaired ice baskets have revealed some instances of missing or damaged screws. Upon identification of this condition, workers promptly documented the

conditions within the Corrective Action Program. A stop work order was promptly initiated on further ice basket installations. Investigation of this condition is ongoing.

5. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance upon successful completion of Corrective Actions related to the ice condenser prior to declaring the ice condensers operable for each unit.

B.2. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion XVI requires, in part, that measures shall be established to ensure that conditions adverse to quality such as defective material and non conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, as of February 4, 1998, the Licensee failed to identify, or implement corrective action for the numerous ice baskets in Units 1 and 2 with missing ice segments (six to eighteen feet in length) representing a significant reduction of basket ice mass, which was a condition adverse to quality, located near the lower end of the ice basket.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Oversight of the Corrective Action Program by PA and management oversight of the resolution of Condition Report Corrective Action were not fully effective.

2. Management had assigned the responsibility for ice condenser surveillance and maintenance to the Engineering organization. Management had also assigned the responsibility for ice condenser oversight within Engineering to a specific individual - the system engineer. Supervision of the contractor work force was performed by the system engineer, in addition to the normal role of management of the technical scope of ice condenser work and analysis of surveillance test results. This broad scope of responsibilities diluted the effectiveness of the system engineer.

3. The ice condenser surveillance basis was not well documented, and therefore, not well understood. As a result, the surveillance procedure did not provide adequate guidance to ensure a representative sample of ice baskets. Specifically, the procedure did not preclude weighing the same baskets repeatedly for each performance of the surveillance. The procedure also did not include software program interface or direction for usage of the software program. The acceptance criteria associated with minimum ice mass was based upon the statistically derived averages

of the weighed iced baskets (for which the software program was in error).

4. The existing weighing methodology and software program for selection and analysis of ice baskets weights ignored some low weight ice baskets and did not take into account increased sublimation of ice in ice baskets along the containment walls. The software failed to adequately translate some T/S requirements into software code.

5. There was inadequate training of ice condenser maintenance, surveillance and supervisory personnel. Personnel did not adequately recognize the potential significance of missing ice segments and as a result, did not document the condition or initiate corrective action.

Corrective Steps That Have Been Taken and Results Achieved

1. The ice condensers were completely thawed, correcting any maldistribution of ice.

2. Initial training for ice condenser personnel has been presented as a part of the ice condenser refurbishment effort. Additional training improvements are in progress.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. The Maintenance organization will be principally responsible for development of the surveillance procedures and implementation of the surveillance and maintenance requirements, including supervision of the labor force. The shift of the direct supervisory oversight of the surveillance labor force to the Maintenance organization will permit the Engineering staff to maintain responsibility for and focus on maintenance of the design basis requirements of the ice condenser system and analysis of surveillance data. The Engineering staff will review future changes to ice condenser surveillance procedures to assess technical adequacy. The procedure writers will receive training on procedure development, which includes guidance on appropriate procedure content.

2. The bases for the ice condenser T/S surveillances will be reconstituted and appropriate information will be incorporated into design basis documents and plant procedures to define information such as margins, assumptions, uncertainties and required qualifications for personnel performing surveillances. Ice condenser surveillance procedures will be rewritten based upon the reconstituted bases. Acceptance criteria for assuring a representative sampling of ice basket weights (and other acceptance criteria) will be established and incorporated into the surveillance procedures. The surveillance methodology as well as the selection and acceptance criteria for individual ice baskets will be reviewed for compliance with both T/Ss and the analytical bases of the ice condenser system.

3. The ice condenser analytical tools such as computer software will be revised or replaced, and subjected to validation and verification. Training will be developed and administered to personnel who perform surveillances and utilize analytical software.

4. The training programs for ice condenser personnel are being upgraded. The upgraded training includes improved guidance on proper techniques to avoid basket damage. Training will stress intended configuration of the ice condenser and design function of each major component. Training will also emphasize that if not in the proper configuration or damaged, the ice condenser may not be able to perform its design function. Training will provide guidance on completing the corrective action task of escalating the identified problem to supervision/management and documenting it in a condition report so that corrective actions can be identified and implemented.

5. The reloading of the ice condensers will provide reasonable assurance of an initial load of uniformly distributed ice, consistent with design basis requirements.

6. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance upon successful completion of the Restart Action Plan for Corrective Actions and prior to declaring the ice condensers operable for each unit.

B.3. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion XVI requires, in part, that measures shall be established to ensure that conditions adverse to quality such as defective material and non conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, as of February 4, 1998, the Licensee failed to identify or implement corrective actions for the dented/buckled webbing, a condition adverse to quality, located near the bottom ice basket rim assembly on more than 40 Unit 1 and more than 100 Unit 2 ice baskets.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Oversight of the Corrective Action Program by PA and management oversight of the resolution of Condition Report corrective actions was not fully effective.

2. Prior to 1998, there had been no rigorous analysis to assess the significance of damaged ice baskets, despite the existence of a T/S requirement to periodically inspect ice baskets for damage. Therefore, no objective basket damage criteria existed. Inadequate understanding and maintenance of the ice condenser design basis, and lack of a definition of detrimental ice basket damage resulted in a failure to recognize the potential significance of the damaged ice baskets.

3. Management had assigned the responsibility for ice condenser surveillance and maintenance to the Engineering organization. Management had also assigned the responsibility for ice condenser oversight within engineering to a specific individual - the system engineer. Supervision of the contractor work force was performed by the system engineer, in addition to the normal role of management of the technical scope of ice condenser work and analysis of surveillance test results. This broad scope of responsibilities diluted the effectiveness of the engineer, and impacted the engineer's ability to provide adequate supervision of the contractor.

4. Dented/buckled webbing occurred due to poor work practices as performed by ice condenser personnel during ice basket weighing, emptying, removal for repair and other maintenance and surveillance evolutions.

Corrective Steps That Have Been Taken and Results Achieved

1. The ice condensers for both units have been completely thawed to allow inspection of the 1944 ice baskets in each unit, for the purpose of identifying and correcting, by repair or replacement, damaged baskets.

2. Initial training for I&M and contractor personnel has been presented as a part of the ice condenser refurbishment effort. Additional training improvements are in progress.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. The bases for the ice condenser T/S surveillances will be reconstituted and appropriate information will be incorporated into design basis documents and plant procedures to further define information such as margins, assumptions, and uncertainties. Analyses have been performed to define allowable levels of ice basket damage. Ice condenser maintenance and surveillance procedures will be rewritten based upon the reconstituted bases and basket damage criteria. Ongoing ice basket inspections are currently utilizing these criteria. Since ice basket damage can occur during weighing, emptying, and other maintenance and surveillance evolutions, maintenance procedures will include provisions to inspect emptied baskets for damage, prior to refilling them with ice.

2. The Maintenance organization will be principally responsible for development of the surveillance procedures and implementation of the surveillance and maintenance requirements, including supervision of the labor force. The shift of the direct supervisory oversight of the surveillance labor force to the Maintenance organization will permit the Engineering staff to maintain responsibility for and focus on maintenance of the design basis requirements of the ice condenser system and analysis of surveillance data. The Engineering staff will review future changes to ice condenser surveillance procedures to assess technical adequacy. The procedure writers will receive training on procedure development, which includes guidance on appropriate procedure content.

3. The training programs for ice condenser personnel are being upgraded. The upgraded training includes improved guidance on proper techniques to avoid basket damage. Training will stress intended configuration of the ice condenser and design function of each major component. Training will also emphasize that if not in the proper configuration or damaged, the ice condenser may not be able to perform its design function. Training

will provide guidance on completing the corrective action task of escalating the identified problem to supervision/management and documenting it in a condition report so that corrective actions can be identified and implemented.

4. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

I&M will be in full compliance upon successful completion of the Restart Action Plan for Corrective Actions and prior to declaring the ice condensers operable for each unit.

B.4. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion XVI requires, in part, that measures shall be established to ensure that conditions adverse to quality such as defective material and non conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, as of February 27, 1998, the Licensee failed to implement adequate measures to preclude repetition of loose U-bolt nuts at the bottom ice basket assembly, significant conditions adverse to quality. Loose U-bolt nuts were identified on ice baskets in 1990 for Unit 1 (documented in PR 90-1639). Preventive actions taken by the Licensee to preclude recurrence of this condition included modifying surveillance procedure 12 THP 4030 STP.211, "Ice Condenser Surveillance" to inspect ice baskets for loose or missing nuts. Subsequently, loose U-bolts were again identified on Unit 1 ice baskets in 1992 (documented in PR 92-1386) and in Unit 2 (documented in PR 92-0360).

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Oversight of the Corrective Action Program by PA and management oversight of the resolution of Condition Report corrective actions were not fully effective.

2. Loose U-bolts can result from vibration of baskets during basket emptying. Procedures did not require a thorough inspection of the emptied ice baskets, including inspection of U-bolts with objective inspection criteria. The procedure also did not have an appropriate threshold for writing Condition Reports, which could allow the corrective action process to be bypassed, in that the procedure provided direction for documenting loose bolts in a procedure attachment, rather than writing a condition report as is specified for broken or missing U-bolts.

Corrective Steps That Have Been Taken and Results Achieved

1. The ice condensers for both units have been completely thawed to allow inspection of the 1944 ice baskets in each unit, for the purpose of identifying and correcting, by repair or replacement, damaged baskets.

2. The ice basket assembly procedure has been revised to include a requirement to check the U-bolt torque during ice basket assembly. A Quality Control (QC) sign-off will also be required.

3. Initial training for ice condenser personnel has been presented as a part of the ice condenser refurbishment effort. Additional improvements are in progress.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. Refer to B.1. and B.3., above.

2. Ice condenser maintenance procedures will include steps to require that ice baskets which are vibrated empty, be inspected for broken U-bolts, and loose or missing nuts and washers. New ice condenser maintenance and surveillance procedures will include guidance to document conditions adverse to quality in the Corrective Action Program. Training on the ice condenser maintenance and surveillance procedures will reinforce the need to document conditions adverse to quality within the Corrective Action System.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance upon successful completion of the Restart Action Plan for Corrective Actions, correction of identified procedure CAP bypasses and prior to declaring the ice condensers operable for each unit.

B.5. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion XVI requires, in part, that measures shall be established to ensure that conditions adverse to quality such as defective material and non-conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, as of February 27, 1998, the Licensee failed to implement adequate measures to identify the cause and preclude repetition of separated Unit 1 ice basket assemblies, a significant condition adverse to quality. The Licensee had not established a definitive root cause for the separated ice baskets documented in CR 1-07-83-647 and CR 1-08-83-771. Further, no corrective action measures had been implemented for these failures. On February 28, 1997, the Licensee identified another separated basket as documented in CR 97-0554. Again, the Licensee failed to determine the cause for the separated basket and did not implement any corrective actions to preclude recurrence.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Oversight of the Corrective Action Program by PA and management oversight of the resolution of Condition Report corrective actions were not fully effective.

2. Separation of ice baskets occurred during attempts to weigh ice baskets during ice weight surveillances, which involves lifting the ice baskets from above. Basket separation occurs if the weighing force applied to the basket exceeds structural limits. Although surveillance procedures include limits on lift forces, allowable forces can be exceeded if not closely monitored, or if forces are concentrated during attempts to free frozen baskets. The procedures were inadequate in that they did not provide sufficiently detailed guidance to preclude activities or combinations of activities which could cause ice basket separation damage.

3. Past training, which included general guidance on techniques to avoid ice basket damage, has not been effective in preventing ice basket damage such as separated baskets.

Corrective Steps That Have Been Taken and Results Achieved

1. The ice condensers for both units have been completely thawed to allow inspection of the 1944 ice baskets in each unit, for the purpose of identifying and correcting, by repair or replacement, damaged baskets.

2. Initial training for ice condenser personnel has been presented as a part of the ice condenser refurbishment effort. Additional improvements in training are in progress.

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to B.3., above.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condensers operable for each unit.

B.6. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion XVI requires, in part, that measures shall be established to ensure that conditions adverse to quality such as defective material and non conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, as of February 27, 1998, the Licensee failed to implement adequate measures to identify the cause and preclude repetition of failed fillet welds at the ice basket bottom hold down bar, a significant condition adverse to quality. Licensee corrective actions completed in 1992 and documented in PR 92-1181 for failed fillet welds at the ice basket bottom hold down bar were not adequate to resolve this significant condition adverse to quality. Specifically, FSAR Appendix M, Section 3.1.4 required application of the design basis accident loads in qualifying the design of

the ice baskets. WCAP-8304, "Stress and Structural Analysis and Testing of Ice Baskets," dated May 1974, defined the design basis accident lateral and compressive loadings used in analysis and testing f the original ice baskets. Licensee engineering evaluations dated July and August 13, 1992, did not apply these lateral or compressive loadings in accepting the ice baskets with the failed fillet welds.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Oversight of the Corrective Action Program by PA and management oversight of the resolution of Condition Report corrective actions were not fully effective.

2. Engineering personnel did not maintain the plant within its design basis in that a 1992 analysis to disposition the significance of ice basket weld defects did not consider all applicable design basis loads as described or referenced in the FSAR. This resulted in an inappropriate decision to accept the potential for latent weld defects on ice basket bottom assemblies as part of the investigation of Problem Report PR 92-1181.

3. The defective welds were caused by incomplete fusion as a result of improper welding techniques during original manufacture. A combination of poor electrode angle, improper welding parameters and inadequate weld joint cleaning resulted in incomplete fusion defects in some of the hold down bar welds.

Corrective Steps That Have Been Taken and Results Achieved

1. The bottom rim of the 1944 ice condenser ice baskets in each unit was removed for inspection and repair of defective welds. Baskets that are repaired on-site are being welded using an approved welding procedure and appropriate welding techniques which is intended to address deficiencies introduced during original manufacture.

2. New replacement ice basket bottoms are being fabricated by a sub-supplier to the Nuclear Steam Supply System (NSSS) vendor. The sub-supplier has been apprised of the potential defective weld issues, and of techniques which contributed to the defective welds. New ice basket bottoms are being assessed to confirm quality during receipt inspection of new baskets.

3. As a point of information, during assessment of the effectiveness of ice condenser refurbishment activities, it was identified that on-site ice basket bottom weld repairs may have been performed to a welding code inconsistent with that described in the ice condenser portions of the FSAR. This inconsistency has been documented in a Corrective Action [Condition Report] document, which is currently under investigation. A stop work on structural welding in the ice condensers was implemented following discovery of this condition pending identification of remedial actions.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. Refer to B.1. and B.3., above.

2. Actions to address the use of an incorrect welding code during the on-site repair of ice baskets will be determined and implemented as part of the resolution of the investigation for the related Corrective Action condition report.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condensers operable for each unit.

C. Violations Related to Control and Maintenance of the Facility Design Basis

C.1.a. Restatement of the Violation

10 CFR 50.9(a) requires, in part, that information required by statute or by the Commission's regulations, order, or license condition to be maintained by the licensee shall be complete and accurate in all material respects. 10 CFR 50.71(e), "Maintenance of Records, Making of Reports," requires, in part, that each person licensed to operate a nuclear power reactor shall update periodically, the final safety analysis report (FSAR) to assure that the information included in the FSAR contains the latest material developed. This submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirements since the submission of the original FSAR or, as appropriate, the last updated FSAR. The updated FSAR shall be revised to include the effects of all changes made in the facility or procedures as described in the FSAR and all safety evaluations performed by the licensee either in support of requested license amendments or in support of conclusions that changes did not involve an unreviewed safety question.

Contrary to the above, as of February 27, 1997, the licensee failed to update FSAR Section 5.3.1, "Design Consideration," to incorporate analysis WCAP-11902, "Reduced Temperature and Pressure Operation for Donald C. Cook Nuclear Plant Unit 1 Licensing Report," dated October 1988, which established the limit for ice condenser flow passage blockages used as the basis for the acceptance criterion in surveillance procedure 12 EHP 4030 STP 250 (Revision 1), "Inspection of Ice Condenser Flow Passages." WCAP-11902 is a safety evaluation that was submitted to the Commission in support of a license amendment request for new limits for an ice condenser flow passage blockage. The information the licensee submitted to the NRC in the FSAR was not complete and accurate.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violations

1. WCAP-11902 was not adequately incorporated into the UFSAR because insufficient consideration was given to 10 CFR 50.71(e) requirements regarding FSAR updates. During the initial 1982 FSAR update project, a decision was made to designate the material in Appendix M to the FSAR as historical and not require its update.

2. Additionally, sufficient guidance concerning UFSAR content and changes was not established and included in the 1982 FSAR update project procedure, nor was it contained in the existing UFSAR update procedure.

Corrective Steps That Have Been Taken and Results Achieved

1. The UFSAR is being reviewed and updated as necessary to reflect the evaluation and analysis contained in WCAP-11902.

2. Chapter 5 of the UFSAR is being revised in accordance with the UFSAR change process to incorporate the appropriate information from Appendix M

and update this information based on the results of the UFSAR revalidation effort.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. The UFSAR update process has been revised to improve the identification and control of UFSAR changes and clarify the treatment of historical information. The UFSAR update process procedure will be revised further to provide additional guidance concerning UFSAR content requirements.

2. The UFSAR will be reviewed to identify any other information incorrectly treated as "static" or historical and will be updated in accordance with the requirements of 10 CFR 50.71(e).

3. Additionally, an internal assessment of the effectiveness of the UFSAR revalidation process will be performed prior to restart.

4. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance when the UFSAR change has been incorporated into the UFSAR as described in Attachment A.

C.1.b. Restatement of the Violation

10 CFR 50.9(a) requires, in part, that information required by statute or by the Commission's regulations, order, or license condition to be maintained by the licensee shall be complete and accurate in all material respects. 10 CFR 50.71(e), "Maintenance of Records, Making of Reports," requires, in part, that each person licensed to operate a nuclear power reactor shall update periodically, the final safety analysis report (FSAR) to assure that the information included in the FSAR contains the latest material developed. This submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirements since the submission of the original FSAR or, as appropriate, the last updated FSAR. The updated FSAR shall be revised to include the effects of all changes made in the facility or procedures as described in the FSAR and all safety evaluations performed by the licensee either in support of requested license amendments or in support of conclusions that changes did not involve an unreviewed safety question.

Contrary to the above, as of February 27, 1998, the licensee failed to update FSAR Figure 6.4.1, "Typical Bottom Ice Basket Assembly," of FSAR Appendix M, "Ice Condenser Component Evaluation Report," to conform to the as-built ice basket bottom assembly configuration that involves a welded hold down bar, versus a bolted rectangular tube support assembly. The information the licensee submitted to the NRC in the FSAR was not complete and accurate.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. The as-built ice basket bottom assembly configuration was not incorporated into the UFSAR because insufficient consideration was given to 10 CFR 50.71(e) requirements regarding FSAR updates. During the initial 1982 FSAR update project, a decision was made to designate the material in Appendix M to the FSAR as historical and not require its update.

2. Additionally, sufficient guidance concerning UFSAR content and changes was not established and included in the 1982 FSAR update project procedure, nor was it contained in the existing UFSAR update procedure.

Corrective Steps That Have Been Taken and Results Achieved

The design bases for the ice condensers are being reviewed to provide assurance that the ice condenser system is maintained in the approved configuration. As part of this process, engineering review of the ice basket bottom assembly design has determined that the as-built configuration of the ice baskets, as identified during the NRC inspection, is appropriate. Consequently, the ice basket assembly figure will be updated and incorporated into the revised UFSAR.

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to C.1.a., above.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance when the UFSAR change has been incorporated into the UFSAR as described in Attachment A.

C.1.c.i. Restatement of the Violation

10 CFR 50.9(a) requires, in part, that information required by statute or by the Commission's regulations, order, or license condition to be maintained by the licensee shall be complete and accurate in all material respects. 10 CFR 50.71(e), "Maintenance of Records, Making of Reports," requires, in part, that each person licensed to operate a nuclear power reactor shall update periodically, the final safety analysis report (FSAR) to assure that the information included in the FSAR contains the latest material developed. This submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirements since the submission of the original FSAR or, as appropriate, the last updated FSAR. The updated FSAR shall be revised to include the effects of all changes made in the facility or procedures as described in the FSAR and all safety evaluations performed by the licensee either in support of requested license amendments or in support of conclusions that changes did not involve an unreviewed safety question.

Contrary to the above, as of February 27, 1998, the licensee failed to update FSAR, Appendix M, Section 6.4.2 to incorporate the latest material developed. Specifically, the following modifications made to the facility as described in the FSAR had not been included in a licensee update submittal. The information the licensee submitted to the NRC in the FSAR was not complete and accurate.

Modification 02-MM-032, "Ice Basket Reinforcement - Problem Report #88-914," installed clamps, a pipe brace, and a cable to repair a damaged Unit 2 ice basket on February 10, 1989.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Modification 02-MM-032 was not incorporated into the UFSAR because insufficient consideration was given to 10 CFR 50.71(e) requirements regarding FSAR updates. During the initial 1982 FSAR update project, a decision was made to designate the material in Appendix M to the FSAR as historical and not require its update.

2. Additionally, sufficient guidance concerning UFSAR content and changes was not established and included in the 1982 FSAR update project procedure, nor was it contained in the existing UFSAR update procedure.

Corrective Steps That Have Been Taken and Results Achieved

The design bases for the ice condensers are being reviewed to provide assurance that the ice condenser system is maintained in the approved configuration. As part of this review, the referenced ice condenser modifications were determined to be inappropriate, and as a result, will be restored to the approved design configuration.

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to C.1.a., above.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance when the UFSAR change has been incorporated into the UFSAR as described in Attachment A.

C.1.c.ii. Restatement of the Violation

10 CFR 50.9(a) requires, in part, that information required by statute or by the Commission's regulations, order, or license condition to be maintained by the licensee shall be complete and accurate in all material respects. 10 CFR 50.71(e), "Maintenance of Records, Making of Reports," requires, in part, that each person licensed to operate a nuclear power reactor shall update periodically, the final safety analysis report (FSAR) to assure that the information included in the FSAR contains the latest material developed. This submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirements since the submission of the original FSAR or, as appropriate, the last updated FSAR. The updated FSAR shall be revised to include the effects of all changes made in the facility or procedures as described in the FSAR and all safety evaluations performed by the licensee either in support of requested license amendments or in support of conclusions that changes did not involve an unreviewed safety question.

Contrary to the above, as of February 27, 1998, the licensee failed to update FSAR, Appendix M, Section 6.4.2 to incorporate the latest material developed. Specifically, the following modifications made to the facility as described in the FSAR had not been included in a licensee update submittal. The information the licensee submitted to the NRC in the FSAR was not complete and accurate.

Modification 01-MM-048, "Minor Modification Temporary Repair of Damaged Ice Baskets," installed clamps, a pipe brace and cables to repair eight damaged Unit 1 ice baskets on July 11, 1989.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Modification 01-MM-048 was not incorporated into the UFSAR because insufficient consideration was given to 10 CFR 50.71(e) requirements regarding FSAR updates. During the initial 1982 FSAR update project, a decision was made to designate the material in Appendix M to the FSAR as historical and not require its update.

2. Additionally, sufficient guidance concerning UFSAR content and changes was not established and included in the 1982 FSAR update project procedure, nor was it contained in the existing UFSAR update procedure.

Corrective Steps That Have Been Taken and Results Achieved

The design bases for the ice condensers are being reviewed to provide assurance that the ice condenser system is maintained in the approved configuration. As part of this review, the temporary repair of damaged ice baskets using installed clamps, a pipe brace and cables was determined to be inappropriate, and as a result, will be restored to the approved design configuration.

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to C.1.a., above.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance When the UFSAR change has been incorporated into the UFSAR a described in Attachment A.

C.1.d. Restatement of the Violation

10 CFR 50.9(a) requires, in part, that information required by statute or by the Commission's regulations, order, or license condition to be maintained by the licensee shall be complete and accurate in all material respects. 10 CFR 50.71(e), "Maintenance of Records, Making of Reports," requires, in part, that each person licensed to operate a nuclear power reactor shall update periodically, the final safety analysis report (FSAR) to assure that the information included in the FSAR contains the latest material developed. This submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirements since the submission of the original FSAR or, as appropriate, the last updated FSAR. The updated FSAR

shall be revised to include the effects of all changes made in the facility or procedures as described in the FSAR and all safety evaluations performed by the licensee either in support of requested license amendments or in support of conclusions that changes did not involve an unreviewed safety question.

Contrary to the above, as of February 27, 1998, the licensee failed to update FSAR, Appendix M, Table 4.3 -1 to incorporate the current maximum analyzed ice basket weight of 1877 lbs., which had been established in a Westinghouse evaluation "Indiana & Michigan Power D.C. Cook Nuclear Power Plant Ice Condenser Seismic Load Study New Ice Basket Design" dated February 28, 1990, accepted by the licensee on March 1, 1990, and incorporated into surveillance procedures. The information the licensee submitted to the NRC in the FSAR was not complete and accurate.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. The maximum analyzed ice basket weight of 1877 lbs. was not incorporated into the UFSAR because insufficient consideration was given to 10 CFR 50.71(e) requirements regarding FSAR updates. During the initial 1982 FSAR update project, a decision was made to designate the material in Appendix M to the FSAR as historical and not require its update.

2. Additionally, sufficient guidance concerning UFSAR content and changes was not established and included in the 1982 FSAR update project procedure, nor was it contained in the existing UFSAR update procedure.

Corrective Steps That Have Been Taken and Results Achieved

The maximum analyzed ice basket weight of 1877 lbs., identified in Westinghouse evaluation "Indiana Michigan Power D.C. Cook Nuclear Power Plant Ice Condenser Seismic Load Study New Ice Basket Design", dated February 28, 1990, is being incorporated into the revised UFSAR.

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to C.1.a., above.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance when the UFSAR change has been incorporated into the UFSAR as described in Attachment A.

C.2.a. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews,

by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.

Contrary to the above, as of February 19, 1998, changes had been made to Unit 1 ice baskets without being subject to design control measures commensurate with those applied to the original design. Specifically, a galvanized bolt had been installed in place of the clevis pin that connected the ice basket to the support structure for ice baskets 4-1-9, 5-9-1 and 20-3-6.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. The substitution of a bolt for a clevis pin was not recognized as a design change, resulting in a bypass of the design change process. Specifically, a change was made to the ice condenser baskets by substituting a bolt in place of the clevis pin without the necessary engineering reviews and approvals required by the design control process. As a result, the physical plant arrangement deviated from the approved configuration depicted on the ice condenser drawings.

2. The ice condenser drawings were not maintained current by either CNP or Westinghouse. A bolt appears as an authorized substitution for the clevis pin on Westinghouse drawings applicable to another ice condenser plant. Availability of this drawing at Cook Plant may have resulted in a conclusion that the bolt-for-pin substitution was an approved substitution for the plant.

Corrective Steps That Have Been Taken and Results Achieved

1. The ice condensers for both units have been completely thawed to allow inspection of the 1944 ice baskets in each unit, for the purpose of identifying and correcting any configurations which do not conform to an approved design configuration.

2. A design change has been initiated to document a bolt as an approved substitution for a clevis pin in this application.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. Ice condenser drawings are being updated to reflect the current configuration, resulting from past design changes. Following update by Westinghouse, these drawings will be incorporated into the plant drawing system and will be maintained by CNP in the future.

2. Significant corrective steps are being taken to upgrade the materiel condition of the ice condensers, and to ensure the ice condenser configuration is consistent with an approved design. Ice condenser walkdowns are being conducted as part of system readiness reviews to identify configurations inconsistent with an approved design. These conditions will be corrected or approved using the design change process.

3. The training program for ice condenser workers is being upgraded. The upgraded training will stress the intended configuration of the ice condenser and design function of major components. Training will also

emphasize that if not in the proper configuration, the ice condenser may not be able to perform its design function.

4. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condenser operable for each unit.

C.2.b. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.

Contrary to the above, as of February 19, 1998, changes had been made to a Unit 2 ice basket without being subject to design control measures commensurate with those applied to the original design. Specifically, a six-inch wide curved sheath of sheet metal had been installed onto the ice basket mesh of ice basket 1-7-9.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. The sheath of sheet metal is a tool that has been used in the past during ice loading to retain ice in the baskets. The sheet metal was not removed following previous basket filling, resulting in an inadvertent design change.

2. A contract labor force has historically been used to perform the majority of maintenance in the ice condensers. Ineffective control of contract labor force is considered a contributor to this condition.

Corrective Steps That Have Been Taken and Results Achieved

The ice condensers for both units have been completely thawed to allow inspection of the 1944 ice baskets in each unit, for the purpose of identifying and correcting any configurations which do not conform to an approved design configuration.

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to B.1., B.3., and C.2.a., above.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condenser operable for each unit.

C.2.c. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.

Contrary to the above, as of February 19, 1998, changes had been made to a Unit 2 ice basket without being subject to design control measures commensurate with those applied to the original design. Specifically, nine rivets had been installed in place of sheet metal screws at the bottom ice basket rim coupling of ice basket 14-6-8.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

Replacement of nine sheet metal screws in the ice basket bottom rim with rivets was not recognized as a design change, resulting in a bypass of the design change process. As a result, the physical plant arrangement deviated from the configuration depicted on the approved ice condenser drawings.

Corrective Steps That Have Been Taken and Results Achieved

The ice condensers for both units have been completely thawed to allow inspection of the 1944 ice baskets in each unit, for the purpose of identifying and correcting any configurations which do not conform to an approved design configuration.

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to B.1., B.3., and C.2.a., above.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to declaring the ice condenser operable for each unit.

C.2.d. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures

shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.

Contrary to the above, inadequate measures were established to assure that the containment sump design basis was correctly translated into specifications for the installation of Fiberfrax refractory insulation in the containment. Specifically, FSAR Section 6.2.2, "ECCS, System Design and Operation," states, in part, that the containment sump provided adequate net positive suction head for the residual heat removal pumps and containment spray pumps to operate in the recirculation mode. However, specification DCC-FP101-QCN (Revision 14 and Change Sheet 1), dated February 28, 1995, "Fire Barrier Penetration Seals," Section 3.5, which details the requirements for the installation and maintenance of fire barrier penetration seals and fire stops states that Fiberfrax refractory insulation can be left in place in containment following the sealing operation. Further, procedure no. 12 CHP 5021.ECD.005 (Revision 9), "Installation, Replacement, and Repair of Silicone Fire Barrier Penetration Seals, " which provides the instructions for cable tray and conduit fire barriers/stops installation, permitted Fiberfrax damming material to remain in place following the installation in containment. Following a LOCA, Fiberfrax material could become dislodged and collect on the sump suction strainers restricting post loss of coolant accident recirculation capability.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Procedures were not developed to implement the requirements of Specification DCC-PV-450-QCS, Thermal Insulation, for planning and work.

2. The sump plugging potential of fibrous material was not addressed in Specification DCC-FP-101-QCN, Fire Barrier Penetration Seals and the related implementing procedure.

3. In addition, the review of NRC and industry notices regarding the potential for recirculation sump blockage was not performed with sufficient engineering rigor. These evaluations were narrow in focus and did not adequately evaluate all of the concerns raised by the Notice or Bulletin. The potential for fibrous material (used in installing cable tray fire stops or as fibrous thermal insulation) to block the sump was not adequately considered, in part, because the design and licensing basis of the sump was that the screen must still function with 50% of the surface area completely blocked.

4. There was also a lack of recognition of the inside of containment as a system requiring strict foreign material exclusion (FME). The containment closeout procedure did not specifically address exposed fibrous material conditions.

Corrective Steps That Have Been Taken and Results Achieved

1. Post-accident debris generation and transport evaluations were performed to identify materials that could potentially be transported to the containment recirculation sump.

2. The following corrective steps were taken to remove unwanted material from containment:

   a. Unencapsulated fibrous damming material identified in cable trays was removed;

   b. Fibrous material identified in containment, where it represented a threat to the sump, was either removed or encapsulated; and

   c. Equipment stored in containment deemed to have potential impact on debris generation and transport was removed.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. The specification for installation of fire stops has been revised to 4disallow the use of fibrous damming materials in containment unless they have been encapsulated or their specified location will not affect the active sump.

2. The procedures for containment tour closeout inspections have been revised to address fibrous material and FME concerns.

3. A new procedure has been issued to implement thermal insulation specification requirements.

4. A specification has been drafted to provide a single internal repository of industry and plant specific guidance on requirements for installation and use of materials in the containment, including guidance on limits for degradation of this material.

5. The specification for containment insulation has been revised to reflect consideration of fibrous materials as a potential threat to the sump to provide additional assurance of conformance with the design bases.

6. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

C.2.e. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the Licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures

shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.

Contrary to the above, inadequate measures were established to assure that the containment sump design basis was maintained and correctly translated into specifications because the specifications were changed without using design control measures commensurate with those applied to the original design. Specifically, the Updated Final Safety Analysis Report at Section 6.2.2, "ECCS, System Design and Operation," states, in part, that the containment sump provided adequate net positive suction head for the residual heat removal and containment spray to operate in the recirculation mode. Specification DCC-PV450-QCS (Revision 6), "Thermal Insulation," at Section 4.3.9, "Metal Jackets Within Containment," states, in part, that all applied pipe insulation within the containment area shall be covered with prefabricated 0. 10" thick, type 304 stainless steel jackets. However, a January 25, 1989 memorandum permitted the use of Temp-mat insulation without a 0.010" thick stainless steel (type 304) jacket as a replacement for metallic insulation contrary to Design Specification DCC-PV-450-QCS, and incorrectly indicated that "the replacement is not considered to be a design change." This design change was not subject to design control measures that were commensurate with the original design. Following a LOCA, without the metal jackets, Temp-mat debris could be swept from its installed location and be transported to the containment sump where it would block the sump screens and contribute to degraded post loss of coolant accident recirculation capability.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. The design control process and the plant procedures were not adequate to ensure that the containment was maintained in a condition consistent with assumptions in the design bases and accident analyses.

   a. An engineering memo was used to justify the use of Temp-mat insulation without encapsulation of the insulation. This change was approved without a review of its potential implications on sump operability.

   b. There was no procedure in place to implement the requirements of the design specification.

2. In addition, the review of NRC and industry notices regarding potential for recirculation sump blockage was not performed with sufficient engineering rigor. The potential for fibrous material (used in installing cable tray fire stops or as fibrous thermal insulation) to block the sump was not adequately considered, in part, because the design and licensing basis of the sump was that the screen must still function with 50% of the surface area completely blocked.

3. There was also a lack of recognition of the inside of containment as a system requiring strict foreign material exclusion (FME). The

containment closeout procedure did not specifically address exposed fibrous material conditions.

Corrective Steps That Have Been Taken and Results Achieved

Refer to C.2.d., above.

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to C.2.d., above.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

C.2.f. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the Licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.

Contrary to the above, the Licensee failed to ensure that the RWST design basis was correctly translated into specifications by failing to implement measures to verify or check the adequacy of instrument uncertainty calculation Engineered Control Procedure (ECP) 1-RPC-09 (Revision 2), "Refueling Water Storage Tank (RWST) Level" dated December 2, 1993. Specifically, the RWST level channel uncertainty calculation did not include the RWST discharge pipe entrance friction head loss and the velocity head loss during maximum emergency core cooling flow rates. These head losses (biases) could have caused the indicated RWST level to read lower than actual tank level. This could affect emergency core cooling system (ECCS) and containment spray (CTS) pump suction transfers from the RWST to the containment recirculation sump during a design basis accident. The premature transfer could potentially cause loss of ECCS and CTS pumps due to vortexing (air entrainment) and/or the loss of net positive suction head (NPSH) from insufficient sump water level.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

There was an inadequate understanding of the instrument design basis and consequently, velocity effects were not fully considered. Elements of the level indication discrepancy described by this violation were previously identified to the plant staff during the 1993 NRC System Based Instrumentation and Control Inspection (SBICI) and was documented and evaluated on CR 93-1212. As a result of the investigation for CR 93-1212,

ECP No. 1-RPC-09, Rev. 2, dated November 1, 1994 was issued. The calculation process measurements effects section considered pipe friction, but neglected to consider velocity head loss and tap entrance loss factors for the level instruments. The assumption was made that since RWST water level would indicate lower than actual level, this would be conservative because the operators would transfer suction to the recirculation sump earlier - thus there would be no adverse consequence to the running ECCS pumps that were taking suction from the RWST. The calculation failed to consider the fact that an early suction transfer from the RWST to the recirculation sump could prevent the necessary volume of RWST inventory being transferred to the recirculation sump and only considered that sufficient RWST volume was delivered per the existing boron concentration analysis in place at the time.

Corrective Steps That Have Been Taken and Results Achieved

1. The transmitter sensing line taps for RWST water level were moved to a new location. Movement of the sensing line taps also alleviated the concern with vortexing and issues over inventory transfer of RWST inventory to the recirculation sump.

2. The engineering design standard was revised to include considerations of flow induced bias in level instrument installations or modifications.

3. The instrument uncertainty guide was revised to detail flow-induced Bernoulli effects.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. The design bases for EOP setpoints will be revised to include the basis for the EOP RWST water level value used.

2. The EOPs for transferring from the injection phase to the recirculation phase will be revised to reflect the correct RWST water level.

3. A review of Emergency Operating Procedure (EOP) footnote values is being conducted to identify and validate footnote values. This review is required to identify each footnote used in the EOPs that provides primary information for taking manual actions, which accomplish safety functions. The intent of this review is to provide reasonable assurance that these actions are consistent with the design bases.

4. The UFSAR will be revised to clearly indicate assumptions associated with the minimum recirculation sump level in containment.

5. As a follow-up to this issue, a study of other safety-related level indications at CNP has been performed. The study identified level instrumentation that has sensory taps located on pipes with flow and concluded that no significant level instrumentation velocity errors are present that have not been previously accounted for.

6. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

C.2.g. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the Licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.
Contrary to the above, the Licensee failed to ensure that the RWST design basis was correctly translated into specifications by failing to implement measures to verify or check the adequacy of instrument uncertainty calculation No. ECP 1-CG-39 (Revision 1), "Refueling Water Storage Tank (RWST) Level" dated October 21, 1994. Specifically, the RWST level channel uncertainty calculation did not include vortexing or air entrainment that could occur at the RWST discharge pipe during maximum emergency core cooling flow rates before the suction for the pumps was transferred from the RWST to the containment sump. Vortexing could cause ECCS and CTS pump loss due to air binding.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

The reason for this violation, as in C.2.f. above, was an inadequate understanding of the instrument design basis and the failure to fully address velocity effects.

Corrective Steps That Have Been Taken and Results Achieved

1. As discussed in C.2.f. above, a modification to move the RWST sensing line taps was performed to address the level instrumentation concerns regarding velocity effects and instrument loop uncertainties.

2. Calculation ENSM970606JJR was performed to evaluate the vortexing issue. Based on the calculation, it was concluded that vortexing is not a concern for the RWST.

Corrective Steps That Will Be Taken to Avoid Further Violations

Refer to C.2.f., above.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

C.2.h. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the Licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.
Contrary to the above, the Licensee failed to ensure that the ECCS design basis was correctly translated into specifications by failing to implement measures to verify or check the adequacy of instrument uncertainty calculations ECP 1-2-N3-01, 1-RPC-14, and 2-RPC-14, Revisions dated March 16, 1994, May 17, 1994, and May 17, 1994, respectively. Specifically, the containment sump level instrumentation loops did not account for the loop uncertainty impact on post-accident containment levels, did not include considerations for residual heat removal (RHR) and CTS pumps NPSH requirements, and did not account for pump vortexing (air entrainment). As a consequence, this could impact ECCS or CTS pumps during transfer from the RWST to the containment sump when implementing emergency operating procedure 01(02)-OHP 4023.ES-1.3, "Transfer to Cold Leg Recirculation."

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

The reason for this violation, as in C.2.f. above, was inadequate understanding of the instrument design basis.

Corrective Steps That Have Been Taken and Results Achieved

1. The use of containment sump level and containment water level indications in the relevant EOP has been reviewed. Based upon this review, it has been determined that the use of containment sump level will be replaced with containment water level.

2. A review of EOP footnote values is being conducted to identify and validate footnote values. This review is required to identify each footnote used in the EOPs that provides primary information for taking manual actions, which accomplish safety functions. The intent of this review is to provide reasonable assurance that these actions are consistent with the design bases. The design bases for EOP setpoints will be revised to include the basis for EOP containment water level values used to determine whether the necessary water level exists in the containment sump to operate in the recirculation phase. The EOPs for transferring to the recirculation phase are being revised to reflect the appropriate containment water level.

3. The UFSAR is being updated and the ECCS system description has been updated to reflect the current methodology used to measure containment water level during EOP use.

Corrective Steps That Will Be Taken to Avoid Further Violations

Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

C.2.i. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the Licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program.

Contrary to the above, as of September 10, 1997, the Licensee did not correctly translate the required containment water inventory design into specifications, drawings, procedures, and instructions. Specifically, engineering reviews did not evaluate the effects of reactor coolant flow diversions into the inactive portions of the containment sump where it would not be available during a design basis accident. Therefore, it was not known if sufficient water could be recovered during a design basis accident to prevent ECCS or containment spray pump vortexing (air entrainment) during containment sump recirculation. This could jeopardize long-term pump operation.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

Previous engineering reviews did not adequately evaluate the impact of flow diversions into the inactive containment sump volumes. Four items that contributed to the condition were:

1. Loss of inventory to the fan/accumulator rooms;

2. Loss of inventory to the upper Containment stairwell drains;

3. Loss of inventory through unsealed penetrations in the Crane Wall; and,

4. The level of knowledge of the engineering staff regarding the response of plant systems to events requiring the utilization of containment spray to the point of operation in the recirculation mode.

Corrective Steps That Have Been Taken and Results Achieved

In the fall of 1997, engineering analyses were developed to show that post-accident containment water inventory was sufficient to meet net positive suction head requirements for CTS and RHR pump operation and to prevent vortex formation in the containment recirculation sump. This analysis included several important changes from the previous analysis:

a. A full spectrum of small-break LOCA cases was evaluated in addition to the traditional large-break LOCA and MSLB cases.

b. The effect of dead-end volumes in the containment, notably the lower containment annulus region, was properly accounted for.

c. The volume of water resulting from ice melt (as calculated by a containment model designated as MAAP4) was credited as a contributor to containment inventory. This change was determined to represent an Unreviewed Safety Question. A T/S Amendment Request (AEP:NRC:0900K) was submitted and was approved by the NRC.

d. The amount of ice assumed to be resident in the ice condenser was increased. This change was also covered by the above noted T/S Amendment Request (AEP:NRC:0900K).

e. The amount of water transferred from the RWST prior to entering the recirculation phase was optimized by revising the emergency operating procedure (ES-1.3) and by addressing the measurement bias on RWST level.

The results of this analysis were presented to the NRC in public meetings and follow-up submittals and formed the basis for resolution of Confirmatory Action Letter RIII-97-11, Item 1 as noted in NRC Inspection Report 98-004. Subsequently, in mid-1998 an assumption used in the MAAP4 containment model was determined to be potentially non-conservative and the analysis is currently being reevaluated.

The non-conservative MAAP4 assumption involved the ice condenser lower inlet doors, which had been assumed to remain open once initially opened. However, the doors operate in a proportional range when subjected to the small differential pressure associated with small-break LOCA conditions. Correcting this assumption produced lower predicted ice melt rates, which resulted in predicted sump levels below the minimum required level in certain small-break LOCA cases. This finding prompted a review of other input assumptions and it was subsequently determined that some aspects of the overall containment inventory analyses might not have been bounding, particularly with regard to identifying limiting single failures in each post-accident scenario. Other assumptions have been found to be overly conservative. The various changes in assumptions are being factored into a renewed effort to resolve the sump inventory issues.

The NRC was informed of the need to revise the response to CAL Item 1 (ref: 4) by letter AEP:NRC:1260GQ, dated March 17, 1999.

Corrective Steps That Will Be Taken to Avoid Further Violations

A comprehensive design review effort is in progress to validate the final analysis and issue resolution for future operation. Although the combined effect of the analysis changes is still under evaluation, three permanent plant modifications are planned to address potential deficiencies in water inventory at the limiting case and to add margin to the containment sump water level. These modifications are:

a. Plugging the CTS nozzles in the lower containment annulus;

b. Rerouting the drains from the CEQ fan stairwells to the active sump region; and

c. Providing more accurate sump level instrumentation.

Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

C.2.j. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the Licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.

Contrary to the above, in 1996 and 1997, the Licensee failed to translate into specifications, drawings, procedures, and instructions for the design basis of the ¾" containment recirculation sump roof vent hole. The design basis, which was to minimize air entrapment under the containment sumps roof slab, was specified in AEP:NRC:00110, dated December 29, 1978. However, in 1996 for Unit 2 and 1997 for Unit 1, the Licensee sealed the vent holes without using the design control process.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Inadequate design control. Design change DC-12-2361, which added the vent holes and moved the ¼" particle retention boundary from the lower chamber of the recirculation sump back to the recirculation sump inlet, did not add foreign material protection for the vent holes, and was not properly incorporated into flow drawings, the system description, and the UFSAR.

This condition contributed to an inappropriate decision to plug the vent holes in 1996.

2 Failure to recognize the plugging of the vent holes as a design change, resulting in a bypass of the design change process. In 1978 five ¾" diameter holes were installed as vents in the roof of the recirculation sump using an approved plant design change. When the five vent holes were discovered in 1996 they were believed to be old bolt holes from previously installed instrumentation. The holes were plugged since they represented a bypass of the sump screen. Subsequent review, during the 1997 NRC AE inspection, determined that these holes were actually vent holes installed to address recommendations generated during hydraulic modeling of the sump. As a result, the physical plant arrangement deviated from the approved configuration.

Corrective Steps That Have Been Taken and Results Achieved

1. The ¾" vents have been reinstalled in the recirculation sump roof in both units using a design change, including appropriate 50.59 reviews. Foreign material retention screens have been added over the vent holes. Design documents have been updated to reflect the presence and purpose of the vent holes.

2. A sample of safety related design changes approved during the same period as RFC-2361 were reviewed to ensure the changes met their functional objectives, were installed in accordance with their intended design, resulted in modifications to appropriate design drawings, maintained the relevant design basis and did not adversely impact operability. This review found that the five design changes met their functional objectives, were installed in accordance with the intended design, and appropriate drawings were issued. No instances were found where the design change adversely affected the operability of any safety-related system, structure or component. A review was also performed of other design changes performed by the lead engineer for RFC-2361. This review concluded that no other safety-related design changes were performed by this individual. These reviews are described in AEP:NRC:1260G5.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. A program of expanded system readiness reviews has been formulated and is in progress for key plant systems. The purpose of these reviews is to provide reasonable assurance that systems can perform their safety and accident mitigation functions.

2. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

C.2.k. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the Licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures

commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.

Contrary to the above, the Licensee did not correctly translate the ¼" containment recirculation sump particulate retention design basis into specifications, drawings, procedures, and instructions. Specifically, design change DC-12-2361, dated March 27, 1979, was deficient because it permitted the installation of fine particulate screens with gaps in excess of ½" at the edges of individual screen sections together with no screens over the ¾" sump vent holes. As a consequence, a common mode failure of both CTS trains could have occurred because of the size of the particles that was permitted to enter the sump. The screens' purpose was to prevent introduction of debris that could plug the containment spray nozzles.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

Design change RFC DC-12-2361 (RFC-2361), which moved the ¼" particle retention boundary from the lower chamber of the recirculation sump back to the recirculation sump inlet, was inadequate in that it did not address all entry paths into the sump. The ¾" vents did not provide FME protection, and the screens at the inlet of the sump did not fully envelope the sump opening. Additionally, an 8" line connecting the containment sump with the recirculation sump was not protected. Since the ice condenser ancillary drains empty into the containment sump, an unprotected path existed between the ice condenser and the recirculation sump. This design change also was not adequately incorporated into flow drawings, the system description, and the UFSAR, since only structural drawings reflected the existence of the ¾" vent holes.

Corrective Steps That Have Been Taken and Results Achieved

1. The ¾" vents have been reinstalled in the recirculation sump roof in both units using a design change, including appropriate 50.59 reviews. Foreign material retention screens have been added over the vent holes. Design documents have been updated to reflect the presence and purpose of the vent holes. Edge gaps at the sump screens have also been closed using a design change.

2. The 8" line connecting the containment sump with the recirculation sump has been covered with an FME screen using the design change process, including appropriate 50.59 reviews.

3. A sample of safety related design changes approved during the same period as RFC-2361 were reviewed to ensure the changes met their functional objectives, were installed in accordance with their intended design, resulted in modifications to appropriate design drawings, maintained the relevant design basis and did not adversely impact operability. This review found that the five design changes met their functional

objectives, were installed in accordance with the intended design, and appropriate drawings were issued. No instances were found where the design change adversely affected the operability of any safety-related system, structure or component. A review was also performed of other design changes performed by the lead engineer for RFC-2361. This review concluded that no other safety-related design changes were performed by this individual. These reviews are described in AEP:NRC:1260G5.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. A program of expanded system readiness reviews has been formulated and is in progress for key plant systems. The purpose of these reviews is to provide reasonable assurance that systems can perform their safety and accident mitigation functions.

2. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

C.2.1. Restatement of the Violation

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the Licensee shall establish measures to assure that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design. Further, these measures shall assure that the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions; and that design control measures provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.

Contrary to the above, the Licensee had not implemented adequate measures to assure that the correct design values were used to calculate the maximum heat loading for the containment spray heat exchanger room per DCCHV12AE06N, dated June 3, 1992, "Heat Gain Calculation - AES System." Specifically, the calculation incorrectly used an essential service water flow of 3300 gpm and a containment sump inlet temperature of 170°F. According to FSAR Table 9.8-5, "Essential Service Water System Minimum Flow Requirement," at note 4 the minimum essential service water flow was 2400 gpm and according to FSAR section 6.3.2, "System Design," the maximum containment sump temperature was 190°F.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

The violation was the result of an inadequate design control process that did not prevent this calculation from being approved and implemented with assumptions contrary to the design bases, as stated in the UFSAR.

Corrective Steps That Have Been Taken and Results Achieved

While the evaluation of this issue is not yet complete, the remedial corrective action will include revision of the AES system heat gain calculation to reflect the appropriate design inputs, including changes to ESW supply temperatures.

Corrective Steps That Will Be Taken to Avoid Further Violations

Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

D. Violations Related to Conduct of Safety Evaluations to Assure Facility and Procedure Changes Do Not Create Unreviewed Safety Questions

D.1.a.i. Restatement of the Violation

10 CFR 50.59(a)(1), "Changes, Tests and Experiments," states, in part, that the holder of a license authorizing operation of a utilization facility may, (1) make changes in the facility as described in the safety analysis report, and (2) make changes in the procedures as described in the safety analysis report without prior Commission approval, unless the proposed change involves a change in the T/Ss incorporated in the license or an unreviewed safety question.

a. 10 CFR 50.59 (a)(2) states, in part, that a proposed change, test, or experiment shall be deemed to involve an unreviewed safety question: (1) if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased; or (2) if a possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report may be created; or (3) if the margin of safety as defined in the basis for any T/S is reduced.

i. Contrary to the above, safety evaluations of March 11 and March 20, 1996, for the core off-load were inadequate because they failed to recognize that the Unit 1 CCW system could not perform its function under the design basis assumptions described in the FSAR and failed to conclude that this change involved an unreviewed safety question. Specifically, during the Unit 2 full core off-load outage and with Unit 1 at 100% power, both Unit 2 CCW and essential service water (ESW) trains were taken out-of-service, leaving one Unit 1 CCW train available to supply spent fuel pool cooling. A single CCW train operating at 95°F could not maintain the spent fuel pool (SFP) bulk water temperature less than the temperature (160°F) specified in FSAR Section 9.4, "Spent Fuel Pool Cooling System." In addition, with a single Unit 1 CCW train providing SFP cooling, a Unit 1 design basis accident would isolate CCW causing a loss of SFP cooling. As a consequence, the SFP time-to-boil margin could be reduced to less than the 5.74 hours specified in FSAR. Operation of the facility with one unit off loaded, the other unit at full power operation, and only one train of spent fuel pool cooling available created the possibility for an accident or malfunction of a type not previously evaluated in the FSAR.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. The shutdown risk assessment procedure lacked a "checking" process to require a proper review of the outage schedule that would result in specific documentation of contingency actions.

2. Workload of the individual performing the shutdown risk assessment was excessive.

Corrective Steps That Have Been Taken and Results Achieved

To address the condition associated with this violation, an evaluation was performed for the dual-train CCW outage on the refueling unit (Unit 2) with the other unit at power. The results of the evaluation showed that had a LOCA occurred on the at-power unit during the dual-train CCW outage on the refueling unit, it was possible to re-energize the CCW header supplying the SFP heat exchanger within 1.5 hours. It was concluded that the 1.5-hour timeframe provided adequate margin to the design temperature limit (160°F) of 3.5 hours and the actual time to boil of 8.3 hours, which is based on a heat load well in excess of the Unit 2R96 SFP heat load. The analysis determined that there was more than sufficient time to maintain the plant within its design limits and licensing basis.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. PMP-4100, "Plant Shutdown Safety and Risk Management," was revised to add a checking process to enhance the level of review performed during evaluation of the outage schedule. In addition, the procedure contains additional guidance for documentation. As a further measure, this revision also added a requirement that an outage schedule be rejected if any higher risk evolutions (known as "red path" configurations) are involved.

2. Instead of the original requirement of a Shift Technical Advisor (STA) performing the shutdown risk assessment, there now exists a multi-discipline, team of evaluators.

3. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance when the revision to the 10 CFR 50.59 procedure (PMP 1040.SES.001, Rev. 5) is made effective and the supplemental training on the procedure revision is completed.

D.1.a.ii. Restatement of the Violation

10 CFR 50.59(a)(1), "Changes, Tests and Experiments," states, in part, that the holder of a license authorizing operation of a utilization facility may, (1) make changes in the facility as described in the safety analysis report, and (2) make changes in the procedures as described in the safety analysis report without prior Commission approval, unless the proposed change involves a change in the T/Ss incorporated in the license or an unreviewed safety question.

a. 10 CFR 50.59 (a)(2) states, in part, that a proposed change, test, or experiment shall be deemed to involve an unreviewed safety question: (1) if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased; or (2) if a possibility for an accident or malfunction of a different type than any evaluated previously

in the safety analysis report may be created; or (3) if the margin of safety as defined in the basis for any T/S is reduced.

ii. Contrary to the above, during July and August of every year between 1994 and 1997, the Licensee made a change to the facility without Commission approval, that involved an unreviewed safety question (USQ). Specifically, the Licensee made a change by operating the facility above its maximum ultimate heat sink (lake) temperature limit (76°F) as stated in FSAR Tables 6.3-2 and 9.5-3. However, no safety evaluation was performed and the UFSAR had not been updated to reflect operation above the 76°F limit. For example, on July 17, July 18 and August 4 of 1997, the temperature exceeded the 76°F limit. Operating the facility with the ultimate heat sink above its maximum temperature involved a USQ because the higher temperatures increased the probability for failure of equipment important to safety previously evaluated in the UFSAR.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Personnel failed to recognize the UFSAR value as a design basis parameter and to recognize interrelationships between the UFSAR value and other design aspects. As a result, personnel conducting 10 CFR 50.59 reviews of the operating procedure did not consider the potential impacts.

2. Plant Manager Standing Orders or their revisions were not required to have 10 CFR 50.59 reviews.

3. Standards for UFSAR compliance and design basis definition were not adequately implemented.

4. The design change procedure did not require a change to a design basis value to be considered as a design change.

Corrective Steps That Have Been Taken and Results Achieved

1. Restrictions were placed on plant operation such that the plant will not be allowed to operate in Modes 1 through 4 with service water inlet temperatures above 76°F.

2. The operating procedure was revised to reflect the UFSAR limit of 76°F on Lake Michigan temperature, with appropriate adjustments to the procedure limits to account for instrument accuracy.

3. A design change package has been initiated to increase the allowable plant ultimate heat sink temperature to a value consistent with the expected Lake Michigan summertime temperatures for Modes 1 through 6.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. A corporate directive and policy were written to provide direction on licensing/design basis and single failure criteria.

2. Training was conducted on the directive and policy to provide the information on dealing with design bases and licensing bases information

to the appropriate personnel, as well as the need for improved documentation and literal compliance with the UFSAR.

3. Existing procedures, such as PMP 1040.SES.001, "Safety Screenings/Evaluations," were revised, where necessary, to reference and incorporate the information provided in the directive and policy.

4. Plant personnel were advised of their responsibilities regarding attention to detail and documentation of the preparation and review of safety screens and safety evaluations through 10 CFR 50.59 training and feedback associated with the Monthly Self-Assessment Program.

5. Plant personnel who perform safety screens and safety evaluations were trained to recognize when "changes," in the context of 10 CFR 50.59, are being made to the plant, and to understand the need to process such "changes" in accordance with the 10 CFR 50.59 process.

6. A process change has been made which requires changes to design basis information, such as lake temperature, to be handled via the design change process. This requirement will effect a more thorough and detailed review of the impact of such changes on the design, operation, and maintenance of the plant.

7. Existing procedures were revised to eliminate the potential bypass of the 50.59 process for changes to the Plant Manager Standing Orders.

8. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

D.1.b.i. Restatement of the Violation

10 CFR 50.59, "Changes, tests and experiments," in part, permits the Licensee to make changes to its facility and procedures as described in the safety analysis report and conduct tests or experiments not described in the safety analysis report without prior Commission approval provided the change does not involve a change in the T/Ss or an Unreviewed Safety Question (USQ). The Licensee shall maintain records of changes in the facility and these records must include a written safety evaluation which provides the bases for the determination that the change does not involve a USQ.

10 CFR 50.71(e) requires, in part, a Licensee to update the FSAR originally submitted as part of the application for the operating license to assure that the information included in the FSAR contains the latest material developed. The updated FSAR shall be revised to include the effects of, in part, all safety evaluations performed by the Licensee in support of conclusions that changes did not involve a USQ.

10 CFR 50.9(a) requires, in part, that information provided to the NRC by a Licensee or information required to be maintained by a Licensee shall be complete and accurate in all material respects.

i. Contrary to the above, from June 1992 to January 1997, the facility was not in conformance with the FSAR in that the Licensee revised emergency operating procedure Nos. 01(02) - OHP 4023.ES -1.3, Revision 2, "Transfer to Cold Leg Recirculation," to operate in series (piggy-back) both centrifugal charging and safety injection trains onto the west residual heat removal (RHR) pump and there was not an adequate safety evaluation performed to determine that there was not a unreviewed safety question. Specifically, FSAR Section 6.2.2 stated that the transfer to cold leg recirculation is performed by trains and specified a transfer sequence from the injection phase to the recirculation phase. However, because the west RHR pump would be operating to supply both centrifugal charging and safety injection pumps, the failure of the west RHR pump would cause the loss of all emergency core cooling. In addition, ES-1.3, Revision Nos. 3 and 4, and their corresponding safety evaluations failed to identify the single failure vulnerability and the fact that the FSAR section 6.2.2 specified a transfer sequence from the injection phase to the recirculation phase that was not implemented by ES-1.3. As a result, the 50.59 safety evaluation for this procedure revision failed to identify that an unreviewed safety question (single failure vulnerability) was created by this procedure change because of the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report was created. In addition the updated FSAR was not complete and accurate in all material respects in that it did not reflect this change in operation of the plant.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. A personnel error resulted in incorrectly incorporating the UFSAR sequence of switchover steps into the procedure ES-1.3.

2. Personnel involved in the preparation and review of the procedure revisions and associated safety evaluations did not recognize that the definition of "single active failure" included failure of a pump to run once it had already started. This precluded the identification and correction of the unacceptable ECCS lineup.

3. Plant Nuclear Safety Review Committee (PNSRC) review of the procedure revisions and associated safety evaluations did not identify the unreviewed safety question or the discrepancy with the UFSAR.

Corrective Steps That Have Been Taken and Results Achieved

1. Emergency operating procedure ES-1.3 for Units 1 and 2 were revised to change the sequence of steps to swap the suction of the ECCS pumps from the RWST to the recirculation sumps, with the appropriate 50.59 reviews. The revised switchover steps are intended to preclude the postulated single active failure that could cause a loss of safety injection (SI) and charging pump capabilities.

2. A UFSAR Change Request (UCR) was prepared to change the UFSAR to reflect the changes in the subsequent revisions to ES-1.3. PNSRC approved the accompanying safety evaluation. The UCR will be incorporated into the UFSAR as described in Attachment A.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. The current review process for Emergency Operating Procedures (EOPs) involves multi-discipline reviews from many technically experienced personnel. This review includes verifying that EOPs are consistent with the UFSAR.

2. A policy and directive were issued which provide specific direction on the definition and use of "single failure criteria" and a specific example of an "active failure" has been cited as "the failure to continue to run." The policy and directive also provided a definition and explanation of the term "design bases" as it applies to the design, operation, support, and maintenance of the CNP.

3. Plant personnel were trained on the policy and directive.

4. Plant personnel were advised of their responsibilities regarding attention to detail and documentation of the preparation and review of safety screens and safety evaluations through 10 CFR 50.59 training and feedback associated with the Monthly Self-Assessment Program.

5. Plant personnel who perform safety screens and safety evaluations were trained to recognize when "changes," in the context of 10 CFR 50.59, are being made to the plant, and to understand the need to process such "changes" in accordance with the 10 CFR 50.59 process.

6. An in-depth assessment of the UFSAR update process was performed to identify program weaknesses. As the result of the assessment, the UFSAR update procedure was revised to formalize the process for initiating and processing UFSAR updates.

7. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions, including improvements in the plant oversight committees' reviews, required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance when the UFSAR change has been incorporated into the UFSAR as described in Attachment A.

D.1.b.ii. Restatement of the Violation

10 CFR 50.59, "Changes, tests and experiments," in part, permits the Licensee to make changes to its facility and procedures as described in the safety analysis report and conduct tests or experiments not described in the safety analysis report without prior Commission approval provided the change does not involve a change in the T/Ss or an Unreviewed Safety Question (USQ). The Licensee shall maintain records of changes in the facility and these records must include a written safety evaluation which provides the bases for the determination that the change does not involve a USQ.

10 CFR 50.71(e) requires, in part, a Licensee to update the FSAR originally submitted as part of the application for the operating license to assure that the information included in the FSAR contains the latest material developed. The updated FSAR shall be revised to include the effects of, in part, safety

evaluations performed by the Licensee in support of conclusions that changes did not involve a USQ.

10 CFR 50.9(a) requires, in part, that information provided to the NRC by a Licensee or information required to be maintained by a Licensee shall be complete and accurate in all material respects.

ii. Contrary to the above, as of September 10, 1997, the Licensee had operated the component cooling water (CCW) system at temperatures (120°F) above FSAR Table 9.5.3 specified design value of 95°F without a written safety evaluation providing the basis for the determination that operating the reactor coolant pump (RCP) seals with higher CCW temperatures was not an unreviewed safety question. In addition, the updated FSAR was not complete and accurate in all material respects in that it did not reflect this change in operation of the plant.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. Inadequate procedural requirements for the level of detail and documentation required in the 50.59 reviews led to the violation.

2. The reason for failure to update the FSAR is indeterminate.

Corrective Steps That Have Been Taken and Results Achieved

1. The reference to allow the temporary operation of the CCW system at 120°F was removed from the operations procedure.

2. An engineering evaluation was completed for the temporary operation of the CCW system at 120°F to achieve a rapid (i.e., 36 hour) cooldown with one train of CCW and RHR available. The results of this evaluation, processed under a design change with an associated 50.59 safety evaluation, determined that the effect of operating CCW system and components for up to three hours at 120°F temperature would not involve a USQ.

3. Based on the successful safety evaluation for the operation of the CCW system at 120°F during cooldown with one train of CCW and RHR available, the operations procedure was revised again to reference 115°F, to account for instrument accuracy and margin of error.

4. The UFSAR will be revised to reflect the results of the engineering evaluation.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. Management has reemphasized the general steps to ensure the quality of safety screens, stressed the expectation for them to be complete and accurate, and cautioned personnel how to proceed if an existing procedure does not satisfy the assumptions of the FSAR or UFSAR or require a safety evaluation.

2. An in-depth assessment of the UFSAR update process was performed to identify program weaknesses. As the result of the assessment, the UFSAR

update procedure was revised to formalize the process for initiating and processing UFSAR updates.

3. An operating procedures review and upgrade project has been initiated. As part of this review, discrepancies between operating procedures and the UFSAR, when identified, will be resolved.

4. Plant personnel were advised of their responsibilities regarding attention to detail and documentation of the preparation and review of safety screens and safety evaluations through 10 CFR 50.59 training and feedback associated with the Monthly Self-Assessment Program.

5. Plant personnel who perform safety screens and safety evaluations were trained to recognize when "changes," in the context of 10 CFR 50.59, are being made to the plant, and to understand the need to process such "changes" in accordance with the 10 CFR 50.59 process.

6. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance when the UFSAR change has been incorporated into the UFSAR as described in Attachment A.

D.1.b.iii. Restatement of the Violation

10 CFR 50.59, "Changes, tests and experiments," in part, permits the Licensee to make changes to its facility and procedures as described in the safety analysis report and conduct tests or experiments not described in the safety analysis report without prior Commission approval provided the change does not involve a change in the T/Ss or an Unreviewed Safety Question (USQ). The Licensee shall maintain records of changes in the facility and these records must include a written safety evaluation which provides the bases for the determination that the change does not involve a USQ.

10 CFR 50.71(e) requires, in part, a Licensee to update the FSAR originally submitted as part of the application for the operating license to assure that the information included in the FSAR contains the latest material developed. The updated FSAR shall be revised to include the effects of, in part, safety evaluations performed by the Licensee in support of conclusions that changes did not involve a USQ.

10 CFR 50.9(a) requires, in part, that information provided to the NRC by a Licensee or information required to be maintained by a Licensee shall be complete and accurate in all material respects.

iii. Contrary to the above, as of September 10, 1997, the Licensee operated the RCP thermal barrier heat exchanger, for both units, with a CCW flow between 25 and 35 gpm for a total flow of 100 - 140 gpm without a written safety evaluation providing the bases for the determination that operating with reduced RCP thermal barrier heat exchanger flow was not an unreviewed safety question. Specifically, FSAR Table 9.5-2 stated that the minimum flow was 140 gpm total or a minimum flow of 35 gpm to each RCP thermal barrier. However, the Licensee operated the RCP thermal

barriers with flow as low as 25 gpm. In addition the updated FSAR was not complete and accurate in all material respects in that it did not reflect this change in operation of the plant.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

1. There was a lack of personnel understanding of "change" and "design and licensing basis."

2. There was a lack of effective procedural guidance on updating the UFSAR.

Corrective Steps That Have Been Taken and Results Achieved

1. Analyses were performed on the each component cooled by the CCW system to determine the acceptable operating flow ranges.

2. The CCW flow balance procedure will be revised, via the 10 CFR 50.59 review process, to reflect the updated flow ranges and instrument uncertainties.

3. Necessary changes to the RCP Thermal Barrier Heat Exchanger flow rate will be incorporated into the UFSAR and the associated design documents.

4. Physical plant changes have been completed on Unit 1 and will be made on Unit 2 to upgrade the flow indication to allow throttling of the CCW flow to ensure the RCP Thermal Barrier Heat Exchanger flow limit is met.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. Plant personnel were advised of their responsibilities regarding attention to detail and documentation of the preparation and review of safety screens and safety evaluations through 10 CFR 50.59 training and feedback associated with the Monthly Self-Assessment Program.

2. Plant personnel who perform safety screens and safety evaluations were trained to recognize when "changes," in the context of 10 CFR 50.59, are being made to the plant, and to understand the need to process such "changes" in accordance with the 10 CFR 50.59 process.

3. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

D.1.c.i. Restatement of the Violation

10 CFR 50.59(b)(1) requires, in part, that the Licensee shall maintain records of changes in the facility made pursuant to this section, to the extent that these changes constitute changes in the facility as described in the safety analysis report. These records must include a written safety

evaluation which provides the bases for the determination that the change does not involve an unreviewed safety question.

i. FSAR Table 9.5.2, "Component Cooling Water System Minimum Flow Requirements Per Train (GPM)" listed the letdown heat exchanger maximum flowrate during normal and cooldown operations as 984 gpm.

Contrary to the above, safety evaluation SECL-97-198, "FSAR Change to Support Increased CCW Temperature," dated November 12, 1997, was inadequate in that an evaluation had not been performed to determine that the change to the system configuration specified in FSAR Table 9.5.2 did not involve an unreviewed safety question. Specifically, the letdown heat exchanger control system could automatically open the CCW outlet flow control valve in an attempt to maintain outlet temperature at 120°F causing flow to potentially reach 1400 gpm. No written evaluation was performed to address this change from the FSAR design maximum flow of 984 gpm.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

Westinghouse and I&M personnel involved with this modification focused on the effects that the elevated CCW temperature would have on the downstream components rather than the capabilities of the letdown heat exchanger process control system function to maintain letdown outlet temperature.

Corrective Steps That Have Been Taken and Results Achieved

1. A safety evaluation was performed to address the potential increase in CCW branch flow to the letdown heat exchanger due to the outlet flow control valve throttling open. The safety evaluation concluded that this condition did not represent a USQ and that the letdown heat exchanger is capable of withstanding, without damage, shell and tube side flow rates significantly in excess of the UFSAR design flows. As this potential condition had not occurred in actual plant operation, it does not represent a past operability issue. The letdown heat exchanger was the only component affected by this potential condition.

2. UFSAR Table 9.5-2 will be changed to reflect the results of the safety evaluation.

3. The CCW flow balance procedure will be revised, via the 10 CFR 50.59 review process, to reflect the updated flow ranges and instrument uncertainties. The updated flow ranges are based on an analysis performed for each component cooled by the CCW system to determine the acceptable operating flow ranges.

Corrective Steps That Will Be Taken to Avoid Further Violations

Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance prior to startup from the current outage for each unit.

D.1.c.ii. Restatement of the Violation

10 CFR 50.59(b)(1) requires, in part, that the Licensee shall maintain records of changes in the facility made pursuant to this section, to the extent that these changes constitute changes in the facility as described in the safety analysis report. These records must include a written safety evaluation which provides the bases for the determination that the change does not involve an unreviewed safety question.

ii. FSAR Section 6.2.2, "System Design and Operation," page 6.2-12, describes the changeover from the injection phase to the recirculation system phase. Specifically, this section describes the low level setpoint of the refueling water storage tank as 131,980 gallons.

Contrary to the above, procedure no. 01(02)-OHP 4023.ECA-0.2 allowed plant operation with the low level setpoint changed from 31 percent to 20 percent. The 10 CFR 50.59 screening, dated January 3, 1998, evaluating the change, failed to recognize and evaluate the change to the plant as described in FSAR Section 6.2, which listed a volume of 131,980 gallons which corresponds to 31 percent of the tank volume for the low level setpoint.

Admission or Denial of the Alleged Violation

I&M accepts the violation.

Reasons for the Violation

There was a lack of personnel understanding of "change" and "design and licensing basis."

Corrective Steps That Have Been Taken and Results Achieved

1. Safety evaluations were completed for the change in the Refueling Water Storage Tank low level setpoint from 31% to 20%.

2. The safety screening for the procedure change will be revised to support the UFSAR change.

3. The UFSAR Section 6.2 will be revised to reflect the results of the safety evaluations.

Corrective Steps That Will Be Taken to Avoid Further Violations

1. Plant personnel were advised of their responsibilities regarding attention to detail and documentation of the preparation and review of safety screens and safety evaluations through 10 CFR 50.59 training and feedback associated with the Monthly Self-Assessment Program.

2. Plant personnel who perform safety screens and safety evaluations were trained to recognize when "changes," in the context of 10 CFR 50.59, are being made to the plant, and to understand the need to process such "changes" in accordance with the 10 CFR 50.59 process.

3. Certain programmatic weaknesses were contributors to this violation. These weaknesses and the corrective actions required to address each are described in Attachment A.

Date When Full Compliance Will Be Achieved

With respect to the cited violation, I&M will be in full compliance when the UFSAR change has been incorporated into the UFSAR as described in Attachment A.