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ComEd

March 28, 1997

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Subject: Braidwood Units 1 and 2 (NRC Docket Nos. 50-456/457)
Byron Units 1 and 2 (NRC Docket Nos. 50-454/455)
Dresden Units 2 and 3 (NRC Docket Nos. 50-237/249)
LaSalle Units 1 and 2 (NRC Docket Nos. 50-373/374)
Quad Cities Units 1 and 2 (NRC Docket Nos. 50-254/265)
Zion Units 1 and 2 (NRC Docket Nos. 50-295/304)

Commonwealth Edison Company's (ComEd) Response to the U.S. Nuclear Regulatory Commission (NRC) Request for Information Pursuant to 10 CFR 50.54(f) Regarding Safety Performance at ComEd

References: (1) H. Thompson letter to J. J. O'Connor, dated January 27, 1997; "Request for Information Pursuant to 10 CFR 50.54(f) Regarding Safety Performance at Commonwealth Edison Company Nuclear Stations."

Dear Mr. Callan:

I am writing to you in my capacity as Chairman of the Commonwealth Edison Company and in response to the NRC's letter of January 27, 1997. In that letter, the NRC requests:

A. Information explaining why the NRC should have confidence in ComEd's ability to operate six nuclear plants while sustaining performance improvement at each site.

B. Criteria that ComEd has established or plans to establish to measure performance in light of the concerns identified above and ComEd's proposed actions if those criteria are not met.

I know that our response to these questions will only be credible if we have critically examined ourselves in providing the answers. Therefore, from the day we received this letter, we have engaged in a searching and challenging dialogue across the company to provide ourselves with the assurance that we can respond completely, accurately, and confidently to the request. Our recent operational event at Zion Station unfortunately serves to reemphasize to ComEd, the NRC and the public the challenge that faces our company in running our nuclear plants properly. We believe that we can do this. Yet, we recognize that the consistency and pace of our improvement efforts in recent years have not been what we intended or expected.

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As the Commission is keenly aware, we have in the past presented plans for performance improvement. Those plans were keyed to people, resources and programs, and our plans of today, too, are dependent on people, resources and programs. Where the people were not right, they have been replaced. Today, we have assembled one of the most experienced nuclear management teams in the country. Where additional resources are needed, they are being provided. Where programs have not worked, we are changing them.

The activities being undertaken to improve performance at our six facilities are explained in this cover letter, detailed in the appended attachments, and organized in the following manner: a statement of the problem, which addresses those issues raised by the Commission in its 50.54(f) letter; an executive summary of the major actions we have undertaken or will undertake to address these issues; a detailed explanation of the initiatives being pursued throughout our company to improve performance; and a description of the performance indicators and criteria that we plan to use to measure our performance, and the actions we intend to take should the criteria not be satisfied.

I. Scope of the Problem — Cyclical Performance

To begin, we fully accept the criticism that the performance at several of our plants has been unacceptably cyclical. We are deeply disturbed that as of this date three of our sites (Dresden, LaSalle and Zion) are on the NRC's Watch List. More recently, a significant operational event involving reactivity management occurred in the Zion Station control room. These problems understandably diminish the success we have experienced in other aspects of our nuclear program. Byron has experienced excellent overall performance. Braidwood is also a good performer. Quad Cities has shown improvement through a three-year Course of Action improvement initiative that began in early 1994. Dresden has also shown steady improvement through the Dresden Plan.

At the same time, we understand the scope and severity of the challenges we face today. We recently completed a comprehensive, critical, and hard-hitting assessment of our performance at the LaSalle and Zion Stations. The Independent Self Assessment Team (ISAT) was comprised of senior industry experts and augmented by Institute of Nuclear Power Operations (INPO) personnel and utility peers. We presented the results of this self-examination to the NRC and the public. The openness and candor of this self-examination is unprecedented for our company, yet we felt that it was necessary to provide a strong foundation for future improvement.

Collectively, the NRC's criticism in its 50.54(f) letter and the LaSalle and Zion self-examinations concluded that we need to: strengthen management oversight of our nuclear operations; consistently apply the necessary resources and management attention to each of the sites to ensure successful completion of our improvement plans; enforce high standards for nuclear performance, particularly in the areas of operations,

engineering, and corrective action; and communicate and internalize the experiences of other nuclear facilities within the division, as well as those outside the company.

In this regard, many actions are underway to improve our performance. Much of this change began in 1996 under our current senior nuclear leadership team and was already being implemented in January 1997 when we received the NRC's letter. Other actions have been initiated since the letter was received, involving every level of the company starting with the Board of Directors and extending through the entire organization and our workforce. These actions are designed to take advantage of ComEd's size and resources to maximize safe, reliable operations at all of our stations.

II. Executive Summary

A detailed description of the critical initiatives that we are undertaking to improve the performance of the Nuclear Operations Division (NOD or division) is set forth in the remainder of this letter. We know that significant improvement in the performance of our nuclear operations is necessary. We cannot serve our customer and public constituencies in the manner which they expect — nor can we meet our responsibilities to our shareholders — without a safe and efficient nuclear operation.

I would characterize the challenge facing our nuclear program as a turnaround effort. I am, however, encouraged by the progress that we have made to date on a number of fronts and am confident that the actions articulated in this letter will sustain consistent improvement and lead to superior performance across our nuclear program.

In this regard, I would like to highlight the essence of our performance improvement programs. Our six critical strategic priorities are to:

- Strengthen Oversight of NOD Activities — Our Board of Directors has approved a strong charter for the Nuclear Operating Committee. This Committee will provide an independent and challenging assessment of our nuclear operations on a continuing and critical basis.

- Increase Financial Resources — Management and the Board have substantially increased the financial resources dedicated to our nuclear program. The $1,028 million expense budget for fiscal year 1997 represents an increase of approximately 28% over the original expense budget approved in 1996. Management will continue to review initiatives to ensure that the necessary financial resources are available to support improvement.

- Expedite Corporate Functional Support — Critical corporate functional areas, including Supply Management, Information Services, Human Resources, and Corporate Security have altered

their work processes to streamline and expedite the support of our nuclear program.

- Support the NOD Management Team — We have a highly-experienced senior management team already in place at the sites and within the division. Our challenge going forward is to support this team with additional resources in critical functional areas — *e.g.*, engineering.

- Improve Cross Divisional Programs and Processes — A number of efforts are underway to substantially enhance the sharing of experience and information across our sites, perhaps the most important of which is the Peer Group effort that was launched in 1996.

- Enforce Rigorous Standards of Performance — The continuing evaluation of our performance against industry-standard and ComEd specific performance measures is critical to the ongoing assessment of our progress and achieving superior performance.

With that as a general background, I will now describe the actions that we are pursuing across our company to meet our objectives in these six critical areas.

III. Actions to Support Improved Nuclear Performance

The company is mobilized in support of the efforts to improve nuclear performance. We have had constant communication throughout the company on the importance of the NRC's request and our response. We are focusing on remedying not only the problems at individual sites, but on improving our overall nuclear program and sustaining that improvement. We intend to make our nuclear program a benchmark for excellence in safe, reliable plant operation and we recognize that action from the very top of the corporation is necessary. The Board of Directors and ComEd senior management will ensure that necessary resources are made available to achieve success.

A. The Board of Directors and Its Nuclear Operations Committee

Simply stated, the safe and effective performance of ComEd's nuclear program is our single highest priority. As Chairman of our Board of Directors, I fully accept the seriousness of the company's current nuclear challenge and will ensure that appropriate changes occur.

Last fall, we elected a new Board member who was formerly the director of the Naval Nuclear Propulsion Program for the Navy and the Department of Energy. In February 1997, he was appointed to serve as Chairman of the Nuclear Operations Committee (Committee) of our Board of Directors. He has devoted a significant amount of time to

visiting all six of our stations and gaining an understanding of activities within the division. Another individual with extensive nuclear Navy experience has also been added to the Committee. We believe that the addition of these talented individuals to the senior oversight group for our nuclear program will produce substantial benefits for the company, particularly given their collective experiences in managing large nuclear programs. Senior corporate oversight of nuclear activities is provided by ComEd's Chief Executive Officer, President, and Vice Chairman, who are also members of this Committee.

To enhance the role of this Committee, the Board approved a formal charter in February that clearly establishes its independence, directs the Committee to provide aggressive oversight of ComEd nuclear performance, and requires the Committee to keep the Board apprised of safety, performance, and resource allocation issues. To ensure sufficient involvement in nuclear activities to carry out its charter, the Committee has established an office in the Nuclear Operations Division executive area and assigned an experienced full-time engineer to that office representing the Committee. This representation will provide the Committee with a vehicle to independently gather information and to observe the improvement programs that are being developed and implemented at the plant sites. The Committee will also continue to ensure that the Board receives timely and independent information concerning the nuclear program, and that line management is held accountable for meeting targeted performance levels.

The Board's active oversight will ensure that the nuclear program has the resources it needs, as well as the managerial capability it requires to achieve its objectives. In March 1996, the Board approved substantial increases above the budget for both operating and maintenance expenses and capital expenditures. In 1996, it also approved changes in the senior management leadership of the division. In January 1997, the Board approved a substantial increase in nuclear operating and maintenance expenses for this fiscal year. However, in the end, the key to improving our nuclear program rests with effective execution in the nuclear division itself, coupled with appropriate resource assistance from the corporation.

B. Resources

The Board has substantially increased resources for the nuclear program. During the early 1990s, budgeted funds were allotted most heavily toward sites perceived to have the greatest current performance challenges. Though the intent was to allot each site enough resources, as we have gained experience and assessed our performance, we have determined that more resources are necessary at all sites. In early 1996, the Board increased the initial 1996 expense budget of $802 million by more than $70 million. The Board took this action in order to ensure that financial resources would be sufficient to support improvement initiatives at each site. Later in the year, spending increased an additional $54 million and ultimately totaled $926 million for the year.

The Board expanded this support for fiscal year 1997 approving a $1,028 million expense budget, an 11% increase over 1996 expenditures. The Board intends to provide a similar level of funding in 1998 to fully resource the operation of the company's nuclear program. The Board approved these increases based upon management's recommendations following review of the needs of each site for ongoing operations and improvement initiatives. The Board is determined to ensure that all of our nuclear sites and supporting organizations will have the necessary resources to sustain improvement.

Even as ComEd is addressing these issues, deregulation is approaching the electric utility industry. Competition is expected to be particularly intense in the area of generation. We expect the low incremental costs of our nuclear power plants to be a decided business advantage to us. Low cost, however, can only be achieved where plants are operating safely and efficiently. As part of our efforts to meet the challenge of deregulation, ComEd is examining its assets, particularly generating assets, with a view toward evaluating their investment and operating costs against their ability to contribute to the revenues of ComEd. This analysis could result in the early retirement or closure of one or more of our nuclear plants. We must emphasize, however, that the plants we continue to operate will be operated in a superior fashion, fully resourced to ensure safe, efficient operations.

C. Corporate Support

All parts of our company are seeking ways to support the nuclear division's improvement initiatives. The company is streamlining the procurement process and providing additional information-processing support for the nuclear division. Other areas of the company, such as Human Resources, Finance, and Corporate Security, are committed to providing the support necessary to assist in the effort.

In an effort to expedite work, the supply management organization is working closely with the division to further the timely delivery of quality goods and services for each plant. A team of managers is refining the process by which goods and services are acquired for the division and designing a supply and inventory process. Additional supply management personnel are being hired. We plan to provide each site with procurement personnel supported by dedicated off-site material planning, logistics and order control personnel.

The information services group is increasing its staffing and adapting company-wide processes to serve specific needs of the division. Information services is also taking steps to ensure that the sites have adequate support for the computers and software and to address specific concerns raised by the division. Finally, the information services group is working with the division and other areas of the company, including human resources, finance, supply management and corporate security, in an effort to identify and prioritize the system enhancements that these groups have requested in order to better support nuclear operations.

D. Nuclear Operations Division Activities

Management Team

Our first priority has been the creation of a strong and experienced management team with proven ability in successful nuclear program management. Prior to 1992, ComEd generally developed its senior nuclear management personnel, both at the sites and in the division, from within our company. In 1992, we began to recruit outside personnel for both our NOD and site management teams. During 1994–1996, we recruited outside nuclear expertise to the management positions of Vice President–Engineering, Vice President–Nuclear Support, and Vice President–Generation Support, as well as several site executive positions. These steps were taken to ensure strength in key positions as well as to benefit from the experience and best practices of nuclear programs outside of ComEd.

We accelerated this effort in early 1996, with the appointment of a Chief Nuclear Operating Officer with experience in overseeing nuclear stations at two other nuclear utilities, including experience overseeing multiple nuclear plant sites. Our nuclear executive team has substantial experience outside of ComEd in both plant turnaround situations and in sustaining strong performance. The Site Vice Presidents at all of our sites have had significant experience at successful nuclear stations or at the Institute of Nuclear Power Operations (INPO). Below the Site Vice President level, we have taken similar steps; for example, in the past two years we have placed experienced Plant Managers from outside utilities at four of our six stations. Similarly, experienced individuals have been assigned to the Maintenance, Engineering, and Radiation Protection organizations.

While we will continue to critically evaluate our management teams and make further changes as necessary, we now consider these teams capable of achieving sustained performance improvement. Recruitment of this seasoned managerial talent brought fresh perspectives, higher standards, and the insight that adding experienced leadership alone would not be sufficient to effect meaningful change. As good as these managers are, they are necessarily limited in number and the scope of activities they can directly impact. Stronger supporting systems are needed to sustain continued improvement across multiple sites. Thus, our improvement efforts as described in this letter and its attachment seek to balance the benefits of common cross-site principles, sharing of information, and measuring techniques with the need for strong local leadership and accountability at the sites.

Engaging the Workforce, Personnel Development and Training

We know the workforce's support of our improvement programs is essential to success. Good communications and a better working relationship throughout our workforce will

be an important part of this process. Senior management is placing greater emphasis on gaining workforce ownership of ComEd's performance improvement initiatives.

We are communicating to our employees through meetings, videotape presentations, and letters from executive management to ensure that they are aware of our current situation and our plans. Our Chief Nuclear Operating Officer, during his monthly Management Review Meetings at the sites, has discussions with groups of 15–20 employees regarding our plans, issues of concern, and steps for improvement. These meetings are intense, open and productive. We also established a communications organization in the division in 1996. With communications specialists at each site and with coordination by a division communications director, common processes are established to share information on key issues, challenges, and improvement progress.

Other actions are designed to strengthen management skills and to engage the workforce in improving performance throughout the division. These actions include: upgraded management development, selection, and succession-planning processes; first-line supervisor skills and leadership training; and expanded workforce skills training. The nuclear division is also utilizing a broad strategy known as *Engaging the Workforce.* This strategy allows teams of employees and managers at all levels throughout the division to actively participate in solving problems, improving work processes, and maintaining the performance improvements across the division. The objectives of the *Engaging the Workforce* strategy are: to obtain overall improvement in existing work processes; reinforce a common language for improvement at each site; ensure that decisions to change work processes are fact-based; and maintain or accelerate the pace of change.

We have taken actions to improve communications and the relationship between management and the bargaining unit. Senior NOD and bargaining unit leadership meet periodically to develop mutually sponsored messages for the workforce concerning the need for continued improvement. Managers and supervisors who interface with bargaining unit employees are undergoing Management Associated Results Company (MARC) training which focuses on basic labor–management and contract administration principles to enable them to better manage the workforce. This training will also foster a more consistent approach to resolution of issues at the sites and across the division.

Management Initiatives in the Nuclear Operations Division

In March of 1996, we began a series of senior NOD management workshops to build a shared view of the improvements needed in the division. A key outcome of this process was the reaffirmation that safety must be our primary focus. ComEd's senior nuclear management team has the shared belief that a culture that values safety first will achieve the other business requirements of production and cost.

To optimize the learning and pace of improvement across all six sites, we have established a Peer Group process. Groups of representatives from each site and nuclear division headquarters are assembled into Peer Groups to develop and implement safe, effective, uniform processes and practices at each site. The Peer Group approach provides an opportunity for representatives from the stations to lead, and be responsible for the performance of processes across the division. Each peer group is sponsored by a senior nuclear division manager. Peer Groups provide division management with a vehicle to implement site-initiated commonality across all nuclear facilities. Peer Groups have been established for Operations, Work Control, Outage Management, Configuration Control, Equipment Reliability, Training and Management and Administration. Other functional workgroups are focused on improving particular work practices within the division.

Also in 1996, we began to implement a more common approach to planning at our nuclear sites with a focus on broader participation by the workforce in the planning process. Each month the Chief Nuclear Operating Officer conducts Management Review Meetings at all sites. These meetings focus on safety performance and the effectiveness of improvement initiatives. Site management reports on the implementation of their plans with an emphasis on accountability for achieving performance results. These meetings serve as a vehicle for senior division management to ensure that improvement continues at each site. They also enhance cross-site commonality, communications, and safety focus.

Engineering

Another key area being aggressively addressed is engineering support within the division and our nuclear stations. The nuclear division's engineering organization has become the primary source of engineering support for ComEd's nuclear power plants. During 1994–1996, ComEd increased the complement of engineers supporting our nuclear program. Moreover, design authority and design records were transferred from contract design engineering organizations to ComEd, on-site design engineering capabilities were increased, and we are developing a series of common engineering processes and procedures for the division.

In November 1996, in response to engineering shortcomings noted at several of our stations, including the results of the NRC Independent Safety Inspection at Dresden and the NRC Engineering and Technical Support Inspection at Zion, we initiated a broad set of initiatives to ensure that each of our sites has high quality engineering support to maintain the facility design bases. Engineering Assurance Groups were formed at each site to improve the quality of design and technical work, with specific focus on maintaining the design bases. We also initiated a series of reviews of safety systems that include verification of conformance to the Updated Final Safety Analysis Report requirements at each of our stations.

Our efforts to strengthen engineering support continue. Earlier this year we developed a set of objectives to improve engineering support during 1997–1998. We established specific plans for accomplishing each objective, along with milestones and performance measures for gauging progress. Key objectives include: providing engineers with ready access to up-to-date design basis information; making our engineering groups proactive in finding and correcting problems and self-critical in evaluating performance; strengthening engineering oversight of site and contractor engineering activities; simplifying engineering processes while strengthening controls over those processes; and strengthening the management skills of each of the site engineering organizations. Other objectives involve backlog reductions, improvements in system/component engineering, and management of large engineering projects.

Actions we are taking to achieve these objectives include: development and validation of updated design and licensing basis information; reconstitution of key calculations; training on engineering topics and processes; and implementation of new oversight mechanisms. Many of these actions are described in greater detail in our January 30, 1997 letter to the NRC on design basis information. We have made, and will continue to make, substantial commitments of financial and personnel resources to accomplish these objectives and ensure that strong engineering support is provided throughout the nuclear program.

Corrective Action Programs

Corrective actions in the past have not always been fully effective and the quality of corrective actions has varied among sites. A revised corrective action program is being implemented at the sites and throughout the division which ensures a more common approach to identification, internal communication, and solutions to problems that are identified within the division. This program was developed by the NOD organization and representatives of all six sites. This program is based upon our review of successful corrective action programs in the industry.

Under the revised program, thresholds and processes for problem investigation, root cause analysis, and trending are being made uniform for all sites and in supporting activities within the division. The new program includes a human error reduction methodology that utilizes problem identification, coding, trend analysis, and root cause analysis techniques. To support this new process, groups of root cause and trend analysis specialists are being trained for each site and for the division. Events at our nuclear stations will be systematically reviewed for lessons that can be learned by the other stations. The revised corrective action process for the nuclear division and performance measures to gauge the effectiveness of the new program will be in place in 1997.

Audits and Assessments

We are strengthening our audit and assessment capability by developing a formal division-wide audit and assessment function. The division's audit and assessment schedule will be adjusted to include areas needing improvement as highlighted by actual performance issues (*e.g.*, performance indicator trends) as well as industry concerns. Our process will ensure that multi-site trends and lessons learned from each site are recognized and acted upon throughout the division.

E. Individual Site Actions

Our actions go beyond the programmatic changes and modification of the supporting functions described above. We remain committed to pursuing the site specific actions necessary to demonstrate tangible improvement. For example, we are standardizing the business planning process and are using site operational plans to drive key improvement programs. Each site has established site performance indicators and targets which measure progress and determine whether targeted performance is being achieved. Each of the sites is currently reviewing the "causal factors" found to be applicable from the Zion and LaSalle ISAT Reports to incorporate appropriate actions into plant processes and programs.

We also are strengthening site self-assessment. All assessment and performance monitoring organizations at each site are being realigned so that they report to a senior quality manager at each station. Site-wide and departmental self-assessments are being established which require each department to assess its performance. Using these programs, each department will drive toward continuous improvement. We are expanding our corrective action programs and have created a corporate corrective actions group to monitor events within the industry and at other ComEd stations so that effective corrective actions can be taken to avoid future problems.

IV. Performance Indicators and Criteria to Measure Achievement

The NRC's 50.54(f) letter requested that we define the criteria we will use to measure performance and identify proposed actions in the event that those criteria are not met. ComEd has used a variety of performance measures and oversight mechanisms to gauge performance at its nuclear plant sites, but there has not been strong consistency between measures used at each site and in the division. As a result, differences in performance quality and trends have not always been clearly apparent. In response to your letter, we have focused our efforts on developing an integrated structure of performance indicators, creating targets or criteria for these indicators, and determining what actions may be appropriate should the criteria not be satisfied.

As a first step in achieving superior performance, we have adopted a goal of operating each of ComEd's facilities at a level better than the average of our peers in the industry.

We plan to utilize a combination of the NRC's Office for Analysis and Evaluation of Operational Data (AEOD) performance indicators and those trended by the World Association of Nuclear Operators (WANO) to determine when we have accomplished this goal. We expect to achieve this goal by the year 2000. The industry-standard indicators that we are monitoring to assess our progress in achieving this goal include: automatic scrams while critical, safety system actuations, collective radiation exposure, unit capability factor, unplanned capability loss factor, safety system performance, and industrial safety accident rate. We have defined criteria that specify the level of performance we expect to achieve for each indicator. These indicators and the criteria will provide a valuable assessment of overall station performance.

We have also adopted indicators which more specifically measure the progress of the division and individual nuclear sites in sustaining improvement. These NOD-wide performance indicators focus on the areas of operations, maintenance, engineering, and corrective actions. These indicators will permit us to direct our resources and management attention at identified weaknesses, and will demonstrate whether improvement is being sustained at each of our stations. We plan to discuss the criteria for the NOD-wide performance indicators in our April 25, 1997 meeting with the Commission. We recognize that, as we gain more experience with these indicators, we may be required to adjust their definitions and criteria.

The Nuclear Operations Committee will be provided with the industry-standard and NOD-wide indicators. The Committee will also monitor other indicators it deems appropriate to ensure full understanding of performance trends. The sites will monitor the industry-standard and NOD-wide performance indicators in a consistent manner that allows comparison of performance across the division. Each site is being allowed to develop its own set of indicators based upon specific site needs. Our standardized performance indicators and associated trending will provide systematic, formal, and comprehensive oversight of the nuclear program and, most importantly, will clearly indicate whether or not we are achieving results (*i.e.*, improvements in overall plant safety).

We will monitor the industry-standard and the NOD-wide indicators on a monthly basis to ensure that our performance criteria are satisfied. As described in Section 4.7 of the Attachment, should we fail to satisfy any performance criterion, the Chief Nuclear Operating Officer (CNOO) will review the actions underway to determine what additional efforts may be warranted. If our performance is not made to conform within two months, station management will develop a written action plan to be implemented under the oversight of the CNOO. If performance continues to lag, the Chief Nuclear Officer (CNO) and the CNOO will establish a special team to identify causes and recommend responsive action. The CNO and CNOO will direct the division to take appropriate actions such as: implementation of special oversight or management observation programs, special action plans, work stoppages, and other actions which we believe can reasonably be expected to improve performance. The Nuclear Operating

Committee of the Board, including the Chairman and CEO, will also be informed of ongoing actions and may direct application of additional resources and increased management attention. The recent decisions to undertake structured restart readiness programs for the LaSalle and Zion Stations demonstrate our determination to take the necessary actions to improve performance. In all cases, the overarching concern will be safe nuclear plant operations.

CONCLUSION

We have the capability to sustain continuous improvement through the combination of people, resources, and initiatives that are underway. The Byron and Braidwood units will continue their good performance and take advantage of the benefits that accrue from cross-site sharing of information and knowledge. The Quad Cities and Dresden Stations have made progress, and they will sustain their improvement trends through focused management attention and the application of necessary financial resources. The LaSalle and Zion Station management teams understand the depth of their problems as a result of their rigorous independent self-assessments. LaSalle's engineering issues will take time to correct and, thus, its progress must be measured over a longer period. Zion faces considerable challenges as highlighted by the ISAT Report. The plans and actions necessary to address these problems are being developed and aggressively implemented.

Our entire company recognizes that we can succeed only if we restore the confidence of the NRC and of the public in our nuclear capability. Our Board of Directors knows this. Our officers know this. Our employees know this. We have committed substantial resources to the nuclear division and have recruited the best nuclear managers we can identify. We are confident that our people today, coupled with financial commitments and clear planning, can produce the results that are necessary: safe, well-run nuclear plants at all of ComEd's sites. We are fully committed to take those actions necessary to assure the safe performance of our operating nuclear facilities.

We look forward to answering your questions regarding this letter at our meeting scheduled in Washington on April 25, 1997 or at any other time you may desire.

Sincerely,

James J. O'Connor

James J. O'Connor
Chairman and Chief Executive Officer

STATE OF ILLINOIS

COUNTY OF COOK

Docket Nos.	**50-454**	**50-455**
	50-456	**50-457**
	50-237	**50-249**
	50-373	**50-374**
	50-254	**50-265**
	50-295	**50-304**

IN THE MATTER OF

COMMONWEALTH EDISON COMPANY

AFFIDAVIT

I affirm that the content of this transmittal is true and correct to the best of my knowledge, information and belief.

James J. O'Connor
Chairman and Chief Executive Officer
Commonwealth Edison

Subscribed and sworn to before me, a Notary Public in and for the State and County above named, this 28th day of March, 1997. My Commission expires on October 2, 1998.

"OFFICIAL SEAL"
MARIA A. LEON
Notary Public, State of Illinois
My Commission Expires 10/2/98

Enclosure: ComEd Response to NRC Request Pursuant to 10 CFR 50.54(f)

cc: H. Thompson, Deputy Director for NRR
A. Beach, Regional Administrator - RIII
R. Capra, Project Directorate - NRR
R. Assa, Braidwood Project Manager - NRR
G. Dick, Byron Project Manager - NRR
J. Stang, Dresden Project Manager - NRR
D. Skay, LaSalle County Project Manager - NRR
R. Pulsifer, Quad Cities Project Manager - NRR
C. Shiraki, Zion Project Manager - NRR
Braidwood, Senior Resident Inspector
Byron, Senior Resident Inspector
Dresden, Senior Resident Inspector
LaSalle, Senior Resident Inspector
Quad Cities, Senior Resident Inspector
Zion, Senior Resident Inspector
Office of Nuclear Facility Safety - IDNS

ATTACHMENT

ComEd Response to NRC 50.54(f) Request

RESPONSE TO NRC REQUEST FOR INFORMATION UNDER 10 CFR 50.54(f) REGARDING SUSTAINED IMPROVEMENT AND PERFORMANCE CRITERIA

CONTENTS

ATTACHMENT

ComEd Response to NRC 50.54(f) Request

1.0 INTRODUCTION

This response provides the information requested by the NRC in its January 27, 1997, 10 CFR 50.54(f) letter to ComEd. The response describes:

1. The detailed basis for confidence that ComEd can continue to safely operate six nuclear stations while sustaining performance improvement at each station; and

2. The criteria that ComEd has established or plans to establish to measure performance and proposed actions if those criteria are not met.

ComEd has had extensive actions underway to improve the performance of its nuclear program. Those actions have included management reorganization, acquisition of experienced new management from outside ComEd, implementation of site improvement plans, and application of additional financial resources. The NRC's 50.54(f) letter has caused the Board of Directors and executive management to take additional measures to both accelerate the pace of improvement and ensure that improvement is sustained. All levels of ComEd are involved, from the Board of Directors, through Corporate and Nuclear Operations Division (NOD) management, to our nuclear plant workforce.

The actions taken or underway to address the causes of cyclic and weak performance are described in the remainder of this attachment.

- **Section 2.0, Management Team and Board of Directors**, describes steps taken to strengthen our Corporate NOD management team and the membership and oversight provided by the Nuclear Operating Committee (NOC) of the Board of Directors.

- **Section 3.0, Resources and Budgeting**, describes actions to increase the amount of resources available to our nuclear program and the budgeting processes being used to ensure that resources provided to each site and the program as a whole are sufficient to support sustained performance improvement.

- **Section 4.0, Corporate Management Oversight and Standardization,** describes actions taken or underway to strengthen and standardize key programs and processes throughout the NOD, and to increase the level of corporate oversight of site performance. This section includes discussion of the indicators and criteria ComEd has established to measure performance and proposed actions if our performance criteria are not met.

- **Section 5.0, Site Actions to Achieve Sustained Performance Improvement,** describes the action being taken at each of the individual nuclear plant sites to achieve sustained performance improvement. This includes discussion of each site's management team, available resources, significant improvement initiatives taken and planned through site operational plans, and monitoring and oversight mechanisms.

- **Section 6.0, Conclusions**, summarizes the basis for confidence that ComEd can continue to safely operate all six of its nuclear stations while sustaining performance improvement at each site.

Supplementing this attachment is an Appendix containing a matrix which shows how ComEd's actions address each of the causes of cyclic performance identified by ComEd based on review of the Zion and LaSalle Independent Self Assessments (ISAs); the NRC's January 27, 1997, 50.54(f) letter; and the Dresden Independent Safety Inspection (ISI) Report. The actions described in this attachment and Appendix reflect our current activities and plans and may be modified as circumstances warrant.

2.0 MANAGEMENT TEAM AND BOARD OF DIRECTORS

2.1 Nuclear Program Management Team

Our first priority has been the creation of a nuclear management team with proven ability in successful nuclear program management. Prior to 1992, ComEd generally developed its senior nuclear management personnel, both at the sites and in the central NOD offices, from within the company. In 1992, ComEd began to recruit outside personnel for both our central NOD and site management teams, and during 1994-1996 we brought in outside talent to the positions of Vice President - Engineering, Vice President - Nuclear Support, and Vice President - Generation Support, as well as several site executive positions (see Section 5.0). Hiring these external personnel provided strength in key positions and allows ComEd to benefit from the experience and practices of nuclear stations outside ComEd.

This effort was strongly accelerated in the first half of 1996, when we reorganized the NOD, appointing a new Chief Nuclear Officer (CNO) with broad management experience within ComEd, and a Chief Nuclear Operating Officer (CNOO) with experience in overseeing nuclear stations at two other nuclear utilities, including experience overseeing multiple nuclear plant sites. Our nuclear executive team has substantial experience in both plant turnaround situations and in sustaining strong performance. While we will critically evaluate our new team on an ongoing basis, we now consider that team capable of achieving sustained performance improvement.

This new management team is providing strong oversight of site activities and is focused on ensuring that our people, processes and equipment support superior performance. [1] To reinforce these principles and ensure that performance results are achieved, the CNOO conducts Management Review Meetings (typically each month) at each site. These meetings are focused on safety performance and the effectiveness of improvement initiatives. During these meetings, NOD executive management challenges site management on the adequacy of their plans and reinforces accountability for achieving performance results. These meetings provide NOD executive management with information on plant performance and are a vehicle for management control to ensure that improvement continues at each site.

The new team is also implementing a broad set of initiatives to bring the level of performance at each of our sites up to the higher standards established for the NOD as a whole (see Section 4.0 below).

2.2 Board of Directors Actions

The Board of Directors has become more actively engaged in ensuring improvements in the performance of ComEd's nuclear program. Since September 1996, ComEd's Chairman/CEO, Vice Chairman, and President have been closely involved in oversight of the nuclear program, and have attended the majority of the NOC's bimonthly meetings at each of our six nuclear plant sites.

Since receipt of the NRC's 50.54(f) letter in January, the Board has revitalized its NOC. An individual with substantial U.S. Navy experience in managing multiple reactor units has been appointed to chair the committee. He is supported by several other Committee members who have extensive nuclear management experience. [2]In a special action, the Board approved a formal Charter for the Committee which clearly establishes the Committee's independence, directs the Committee to provide oversight of ComEd nuclear program performance, and requires the Committee to keep the Board apprised of safety, performance, and resource allocation issues, as well as its views on whether nuclear program management actions are appropriate and effective.

To fulfill this role, the Board has directed the Committee to conduct site visits, examine plant material and equipment, meet with management oversight groups and other personnel, and review any ComEd files, data and reports it judges necessary to carry out its function. The Committee regularly reports to the full Board.

The new leadership of the NOC has interacted with internal organizations and external parties to update the Board's understanding of performance and regulatory issues. Recent actions have included meetings with senior NOD executives and visits and meetings with management of each of the nuclear plant sites. In February, 1997, the Committee established an office in the NOD executive area, and an experienced engineer representing the Committee is resident in that office full time. This representation provides the Committee with a continuous presence, enhances communication with senior NOD management, enables the Committee to gather information independently, and places it in a position to directly observe NOD executive management efforts to oversee and coordinate improved performance at the six plant sites. The NOC is representing the Board in overseeing the actions in response to the NRC's 50.54(f) letter, including development of performance indicators that will be used by the Board to track performance of the entire ComEd nuclear program. [3]The Committee will continue to ensure that the Board receives timely and independent information concerning the nuclear program, and that the line management is held accountable for meeting Board expectations.

3.0 RESOURCES AND BUDGETING

The ComEd Board of Directors and Corporate management have taken steps to increase the resources available to our nuclear program and to establish budgeting processes that ensure each site and the program as a whole have the resources needed to operate safely and sustain improved performance.

In early 1996, the Board of Directors increased the initial 1996 budget of $802 million by $70 million. Later in 1996 spending was increased by an additional $54 million, and ultimately totaled $926 million for 1996. The Board took this action in order to ensure that financial resources would be sufficient to support improvement initiatives at each site. The Board has continued and expanded this support for 1997. In January 1997, the Board approved a further increase of 11% over 1996 expenditures. The cumulative effect of these increases has been to raise the nuclear program budget from $802 million at the beginning of 1996 to $1.028 billion for 1997, an approximate 28% increase. The Board approved this increase based upon the recommendations of the NOC and NOD management following review of the needs of each site for ongoing operations and improvement initiatives. The Board is determined to ensure that all of our sites and the Corporate NOD organization have the resources they need to operate safely while sustaining performance improvement.

ComEd Corporate and NOD management have established a budgeting process designed to ensure that resource application supports safe operation and sustained improved performance throughout our nuclear program. During the early 1990s, budgeted funds were allotted most heavily toward sites perceived to have the greatest current performance challenges. Though the intent was to allot each site enough resources, as ComEd has gained experience and assessed performance, we have determined that more resources are necessary.

For 1997, at the CNO's request, NOD management benchmarked similar stations considered to be top industry performers to determine reasonable ranges of expenditures. These figures were then increased to account for the performance issues facing ComEd's plant sites. In concert, each site developed a budget proposal based upon site needs, specifically including the estimated costs of improvement initiatives. NOD executive management presented a proposed budget based on these efforts to Corporate management, the NOC to the Board, and ultimately the full Board of Directors, which approved it. ComEd will continue to ensure that the NOD and each site have the resources to sustain performance improvement.

4.0 CORPORATE MANAGEMENT OVERSIGHT AND STANDARDIZATION

The new NOD management team is implementing a broad set of initiatives which demand critical self-assessment, bring key programs and processes up to improved Corporate-wide standards, and subject site activities to strong Corporate oversight. Lessons learned and other information will be shared and an integrated approach will be taken to solving common problems. Performance will be gauged by objective results, and specific performance measures and criteria will be used to measure progress. In cases where performance criteria are not met, a defined set of action steps will be taken to return performance to satisfactory levels.

In establishing this approach, the following steps have been taken, are underway, or are planned:

- Identifying and resolving fundamental causes of cyclic performance through critical self-assessment and responsive action (Section 4.1).
- Engaging the management and resources of the full corporation in support of the nuclear program (Section 4.2).
- Strengthening and standardizing engineering support and programs both in the Corporate NOD organization and at the sites (Section 4.3).
- Improving leadership and management development, training, and engaging the workforce (Section 4.4).
- Improving and standardizing corrective action programs and response to lessons learned (Section 4.5).
- Expanding and upgrading Corporate oversight activities (Section 4.6).
- Establishing standardized performance indicators and criteria to measure results and to ensure that all sites receive appropriate focus (Section 4.7).

Each of these is discussed below.

4.1 Identification and Resolution of Fundamental Causes of Cyclic Performance

Corporate NOD management is requiring critical self-assessments and responsive action to address fundamental causes of performance problems. In the fall of 1996, the CNO commissioned a comprehensive ISA of performance at LaSalle and Zion Stations. The Independent Self Assessment Team (ISAT) consisted of seven independent nuclear consultants, each with more than 20 years of experience in their respective areas of expertise. The ISA's goal was to identify gaps between ComEd's performance and that of the best nuclear plants in the United States, with particular emphasis on the fundamental causes that have prevented achievement of best performance.

The ISAT concentrated on the identified performance weaknesses and their underlying causes. The ISAT's review emphasized problem definition and identification of fundamental causes, rather than corrective actions. Consequently, the ISAT did not focus upon the effectiveness of ongoing and planned improvement initiatives. The ISAT acknowledged that many corrective actions were in the process of being developed, and some have already been implemented, to address LaSalle and Zion weaknesses.

The ISAT assessed performance at LaSalle and Zion over the past two years in five functional areas: Operations and Training, Maintenance, Engineering and Technical Support, Plant Support, and Management and Organization. The ISAT's assessment process consisted of three phases.

- In Phase 1, over a three-week period, the core team performed a detailed review of existing performance monitoring and assessment documentation. These documents included, but were not limited to, NRC inspections, evaluations, ComEd assessments, corrective action documents and performance improvement plans. The majority of the weaknesses described in the ISA were identified in these documents.

- In Phase 2, over a two-week period at each site, the ISAT verified the Phase 1-identified weaknesses based upon LaSalle and Zion observations, interviews and further document reviews. The core team members were augmented by Institute of Nuclear Power Operations (INPO) and industry peers at each station in connection with the Phase 2 work.

- Upon completion of the Phase 1 and 2 reviews, the ISAT performed a review of the causal factors for operations, maintenance, engineering and plant support and conducted a fundamental cause assessment for the management and organization functional area.

As the ISA proceeded, the NRC was kept fully informed. On November 19, 1996, ComEd management and the ISAT briefed NRC Region III management concerning the process used for the assessment. NRC representatives attended the site debriefing at Zion on November 23, 1996, and at LaSalle on December 13, 1996. On December 23, 1996, the ISAT briefed the Regional Administrator on the LaSalle and Zion observations, causal factors and the ISAT's preliminary fundamental cause assessment. On February 18, 1997, ComEd submitted the final ISA Reports to the NRC, and on February 20, 1997, ComEd and the ISAT participated in a public briefing at which Corporate NOD, LaSalle and Zion management reviewed their responsive actions with the ISAT.

The CNO and CNOO reviewed the ISAT Report and agreed with its conclusions. The CNO and CNOO set expectations for responsive action by the LaSalle and Zion Site Vice Presidents and the Site Vice Presidents have already initiated corrective actions. Although the ISAT focused upon fundamental causes and did not review the effectiveness of ongoing improvement initiatives, the ISAT did recognize that many of the necessary corrective actions were already in place as actions in the 1996 LaSalle and Zion Operational Plans. [5]Additional corrective actions to assure that the ISAT fundamental causes are addressed have been incorporated in the 1997 LaSalle County Unit 1/Unit 2 Restart Plan and the 1997 Zion Operational Plan.

ComEd management has carefully reviewed the fundamental causes identified by the ISA along with the apparent causes identified in the NRC's January 27, 1997, 50.54(f) letter, the Dresden ISI, and other information. Based upon this review, ComEd has concluded that our failure to achieved sustained performance improvement is due to four causes:

- Oversight - We need to strengthen management oversight of nuclear operation.
- Management Attention and Resources - We have not consistently applied necessary resources and management attention to the sites to ensure successful completion of our improvement plans.
- Standards - We have not consistently enforced high standards for nuclear performance, particularly in the areas of operations, engineering and corrective action.
- Lessons Learned - We have not consistently communicated and internalized the experiences of our own nuclear facilities or those of others in the industry.

A matrix which summarizes the action ComEd has taken or underway to address these causes, is provided in Appendix 1.

[6]The remaining four ComEd sites are reviewing their Plans against the ISA fundamental causes to assure that those causes will be addressed and resolved. [7]Long term sustainable improvement will be the focus in future ComEd Operational Plans. [8]The CNOO has relayed his expectations to the sites on the resolution of ISA issues and will be performing periodic assessments of the progress toward resolution.

4.2 Engaging the Corporation in Support of Nuclear

All parts of our Company are mobilized in support of the nuclear program. Shortly after receipt of the NRC's 50.54(f) letter, ComEd's Chairman and Chief Executive Officer met with executives and managers from throughout ComEd, and senior representatives of the bargaining unit, to inform them of the gravity of the current situation, enlist their support in achieving sustained improvement throughout our nuclear program, and assure them that Corporate support is being provided. On February 8, 1997, the Chairman convened the senior ComEd Corporate officers, both within and outside NOD, to identify actions that could be taken both inside NOD and elsewhere in the company to support the nuclear program. As a result of this meeting, several actions are underway, including:

- To improve parts availability and ensure procurement and use of correct parts, additional supply resources are being deployed. "Take Action Now" teams have been formed to formulate and implement a short-term program to improve materials and supply performance. Inspection practices have been significantly enhanced at the central warehouse to ensure that parts delivered are those requested. [9]Parts analysts and procurement specialists are being added to the sites to improve parts specification, control and the timeliness of procurement activities.

- A major challenge at the sites is getting work done in a timely and effective manner. Support of the sites' Electronic Work Control Systems, which are used to plan and control work at the nuclear stations, has been made the highest priority of the Corporate Information Systems organization. The sites have also been provided with additional computer hardware and the acquisition of hardware, software, and computer services has been streamlined.
- [10]The Human Resources department has made several changes to improve support of the nuclear program. These include authorization for payment of overtime to several additional grades of personnel, and streamlining of hiring personnel into the nuclear program. In addition, [11]proposals are being developed for improving work rules that affect quality and timeliness of work completion at the nuclear plant sites.
- [12]Corporate nuclear security functions will be transferred to report to the NOD.

These are first steps, but significant because they demonstrate the commitment of the full financial and personnel resources of the Corporation to our nuclear program. [13]We will continue to engage the entire Corporation to help sustain improvement in the nuclear program.

4.3 Engineering Support

A key area requiring improvement at the NOD level and at all of our stations is engineering and technical support. ComEd is upgrading Corporate engineering support and standardizing key processes, and has initiated short term and long term corrective actions to improve the quality and timeliness of engineering support. The following summarizes actions taken to date, results achieved, and actions in-process and planned.

Until 1994, ComEd relied heavily on outside engineering contractors to provide engineering services to the six nuclear stations. In 1994, ComEd began a three-year strategic plan to transition engineering leadership to ComEd, particularly in the area of design engineering. The strategy during this time was for ComEd engineering to become the design authority and primary provider of engineering services and thereby decrease dependence on outside engineering support. During 1994 to 1996, considerable progress was achieved. [14]Over 100 people were added in ComEd nuclear program engineering organizations. [15]Design records were transferred from contract design engineering organizations to ComEd, and on-site design engineering capabilities were created along with a clearer NOD Corporate engineering role. During this time, progress was made in the development and issuance of a series of common nuclear engineering processes at the six ComEd nuclear sites.

In November 1996, in response to inspections and events at the Dresden, Zion and LaSalle Stations, several corrective actions were initiated at all six sites to address identified concerns with engineering quality, design basis, and system readiness. [16]These actions included, in part, establishment of an engineering assurance function at each site and the NOD central offices to further ensure the quality of design and technical work, commencement of safety system functional inspections, review of Technical Specification interpretations, and a review of the top ten risk significant systems for items that may impact system readiness. The results of assessments have also shown that improvement is needed in the accessibility and quality of design basis information. They also identified the need to strengthen the safety culture in the engineering organization.

Longer term efforts have been initiated that will significantly improve the effectiveness of engineering and strengthen the role of ComEd's engineering organization as the design basis authority. [17] ComEd has embarked on a significant project to develop and validate essential design and licensing basis information and reconstitute essential calculations. [18]Over the next three to five years, ComEd will expand the scope and coverage of the design basis document (DBD) program. Depending upon the particular site, this will include system DBDs, topical DBDs, or a combination of both. [19]For Byron and Braidwood, specific tools ("topical roadmaps") will be developed to assist engineers in obtaining needed design basis information. Training will be provided to engineers and the plant staff.

Efforts will also be undertaken to improve the quality of the calculations necessary to support the design bases of our plants. [20] A nuclear engineering procedure for this effort is being prepared and will address the review and reconstitution of selected key design basis parameters/calculations. This procedure will be used to determine whether calculations exist, and if so, whether they are adequate to support design basis requirements. [21]Those calculations determined to be significant will then be revised or reconstituted as appropriate.

ComEd recently performed a review for all stations to determine actions necessary to assure conformance with the UFSAR and consistency with other design information. It was concluded that improvements were necessary to improve conformance and the processes for ensuring future conformance. [22]Thus, a verification and validation of the regulatory design basis information contained in the UFSAR will be performed at each site. This will include a review of the UFSAR, Technical Specifications, other applicable design documents, and plant procedures. These review efforts will help to ensure that UFSARs accurately describe the design and operation of the plants and that these requirements are consistently reflected in important controlled documents.

The efforts needed to further improve engineering performance in 1997 and beyond have been formulated by a team of representatives from site engineering, Corporate NOD nuclear engineering services, and outside consultants with expertise in strategic planning, benchmarking and process optimization. The team made use of benchmarking studies of other utilities which manage multiple stations. Additionally, several major inspections and assessments over the past six months have provided further insight into the strengths and weaknesses of engineering at all six stations. As previously discussed, actions have been initiated to address areas in need of improvement. Our objectives include:

1. Improve the access, quality, and staff understanding of design basis information.

   The actions being taken to address the accessibility, quality, understanding and adherence to design basis information are discussed above.

2. Develop a strong safety culture.

   [23]The expected roles and responsibilities within the engineering organization will be clarified and reinforced through frequent communication and mentoring. [24]Additional training will be conducted to address identified areas for improvement such as design basis adherence, configuration management implementation, operability determinations, and safety evaluation preparation. [25]Engineering Assurance groups have been formed to perform technical oversight of important engineering products such as safety evaluations, operability reviews, design changes and so forth. These groups not only serve to better assure quality engineering products, but are already providing mentoring to the engineers and are raising the level of rigor and thoroughness in engineering activities. Through implementation of these activities, engineering will become a more self-critical organization.

3. Conduct technical oversight of engineering and major contractors.

   As mentioned above, Engineering Assurance groups have been formed to perform technical reviews of important engineering products. The Engineering Assurance groups are composed of experienced ComEd technical personnel supported by outside experts with strong nuclear plant engineering experience. [26]Corporate and site engineering personnel are participating with the quality verification organizations in the conduct of technical audits of vendors providing important engineering products and oversight of ComEd internal engineering products and program plans.

4. Streamline engineering processes.

   [27]Engineering has initiated actions to streamline and improve engineering work processes and management controls associated with the implementation of engineering programs and development of engineering products such as plant modifications and temporary alterations. [28]Engineering standards and specifications are being reviewed, revised and developed as determined necessary.

5. Strengthen the management of engineering.

   [29]Project controls are being developed for all site engineering groups. Common safety, cost and production performance indicators have been developed and goals are being established. [30]Periodic expectation and accountability meetings will be conducted with senior NOD management.

6. Reduce engineering backlogs.

   [31]The engineering backlogs are being defined, characterized and a plan established to reduce backlogs. Contractor resources and increased ComEd staffing are being retained for this effort.

7. Improve system/component engineering.

   [32]System engineers are becoming system managers. System managers will be responsible for assuring system readiness and determining the work needed for their systems. Common system trending will be developed and implemented. [33]A Corporate component engineering program will be defined and NOD-level component technical experts added to the NOD staff to provide common direction and assistance to the six sites as needed.

Other objectives involve management of large engineering projects and NOD fuel and reload design services.

While we recognize that these activities will require a substantial financial commitment, we view this effort as essential to safe and competitive electricity production.

4.4 Leadership/Management Development, Training, and Engaging the Workforce

ComEd management has initiated a series of actions to strengthen management and first-line supervisor development and to engage the workforce in improving performance throughout NOD. These actions involve: (1) management selection, development, succession, and supervisory skills; (2) engaging the workforce and improving management/bargaining unit relations and practices; (3) personnel training; and (4) a "Getting Work Done" initiative. Through these actions, NOD is raising the standard of leadership effectiveness, quality, and engaging the workforce in support of sustained improvement.

4.4.1 *Management Selection, Development, Succession, and Supervisory Skills*

In regard to management selection, [34]NOD has completed, and NOD senior management has approved, competency models for management. These models are used to drive selection, assessment and development programs as part of the competency-based NOD Human Resource Management System. The implementation of the new NOD Performance Management System ("Commit for Results") will align individual performance with the pertinent safety, production and cost targets in that individual's department or site operational plan. [35]The NOD Leadership Planning and Development (succession planning) Process has adopted a competency-based process to develop succession plans for NOD senior management positions.

[36]In regard to first-line supervisor (FLS) development, NOD has implemented new processes to ensure the readiness of new FLS candidates and upgrade the skills of FLS incumbents. The new tools and processes put in place include: Assessment Centers (for selection and development); Pre-supervisory Training; FLS Incumbent Training; FLS 360-Degree Development Feedback; and FLS Development Planning.

New FLS candidates participate in the FLS Assessment Center (for selection) and are rated as "ready" to advance. Those candidates identified as ready participate in supervisory training when assigned independent supervisory responsibilities.

NOD FLS incumbents participate in the "POWER UP" FLS development process. The POWER UP process requires incumbent supervisors to participate in a two-day Assessment Center (for development) which assesses supervisory skills through interviews and several job-related simulations, including a 360-degree assessment questionnaire completed by their boss, peers and subordinates. A customized Development Plan is then created by each participant based on assessment center and 360-degree feedback results.

The FLS POWER UP process also includes training to help supervisors close skill gaps identified in the developmental assessment centers. The POWER UP training is competency based and consists of four days of required training and two to four days of elective training. [37] Additionally, second-line supervisors are attending two days of training to learn how to better coach and develop the supervisors reporting to them. Feedback on the FLS POWER UP process has been very positive. To date, approximately 250 incumbent supervisors have participated in the developmental assessment centers and over 100 supervisors have participated in the training.

Over 900 NOD managers and supervisors that interface with bargaining unit members have attended Management Associated Results Company (MARC) training to enable them to better manage the workforce. Bargaining unit leaders and representatives were also invited to attend. This training focuses on basic labor-management and contract administration principles, encourages employee involvement and decision-making at the lowest appropriate level, and creates a culture of support among managers, their direct reports and human resource representatives. [38]This training has also led to establishment of local and business unit protocol groups which provide the opportunity for more consistent resolution of issues across sites.

4.4.2 *Engaging the Workforce and Bargaining Unit Relations*

"Engaging the Workforce" is a broad strategy designed to give managers and employees the forums and tools they need to set direction, solve problems, improve work processes and maintain the gains already made. This strategy is deployed at the site level through a site Lead Team which has the responsibility for using a process known as Policy Deployment. This process requires the Lead Team to review Division Performance Targets, analyze and identify their site's gaps in meeting the performance targets, then charge and sponsor Improvement Teams to use quality tools and techniques to close the performance gaps identified by the Lead Team. Progress is monitored during site Lead Team meetings. The Engaging the Workforce effort is facilitated by site personnel trained in quality tools and facilitation techniques as well as by a site Quality Coach. The Quality Coach provides consultation on the use of the quality tools and methods to the Improvement Teams and the Lead Team.

The Engaging the Workforce strategy, by design, is in different stages of implementation across the Division. The Quad Cities and Byron Stations have progressed though developing their Lead Teams, installing the Quality Coaches, performing Policy Deployment, training facilitators, and chartering improvement teams. Dresden and Braidwood Stations have not completed Lead Team Development, but have performed Policy Deployment (Dresden only), installed a Quality Coach, trained facilitators, and have chartered Improvement Teams. LaSalle Station performed a Policy Deployment exercise in 1996, installed a Quality Coach, has trained facilitators and has used Improvement Teams, but management reorganization will require redevelopment of the Lead Team. [39]Zion Station has participated in the initial Engage the Workforce development, however, due to the current performance situation, will defer additional activities until a later time.

[40]The Engaging the Workforce deployment plan for 1997 includes: delivery of an Engaging the Workforce Deployment Plan; training and developing Lead Teams at Braidwood and Dresden; training and development of facilitators and Improvement Team Leaders; and conducting Policy Deployment at Braidwood, Byron, Dresden, and Quad Cities.

Improved management and bargaining unit relations are being built through the Joint Leadership Team, which is co-chaired by the CNOO and the bargaining unit President/Business Manager. This team meets periodically to develop mutually-sponsored messages for the workforce concerning the need for continued improvement. As the Joint Leadership Team builds a foundation for change, [41]management and the bargaining unit are negotiating supplemental collective bargaining agreements that will enable work practice improvements.

4.4.3 *Personnel Training*

Corporate action is also underway to further improve the performance of personnel through training. This division-wide effort will upgrade the training materials, instruction and training facilities while promoting standardization as appropriate. All of these efforts are intended to improve the overall level of the training and qualifications of our workforce. Recent division training initiatives include:

- [42]Standardized 10 CFR 50.59 and operability training has been developed and provided to Plant Operating Review Committee (PORC) or Safety Review Committee (SRC) members at five our six sites. A similar orientation has been provided to NOD Senior Management.

- [43]Criteria for direct hire selection and training of journey level maintenance craftsmen and technicians are being redefined. Elevated standards are being established for completion of initial training.

- [44]A standard job assignment matrix is being developed for basic and some intermediate maintenance tasks. This standard matrix will help ensure that workers are fully qualified to perform assigned work tasks.

- [45]Common Corporate Administrative Procedures governing the analysis, design, development, implementation and evaluation of training will be implemented in 1997.

- [46]Position descriptions have been defined for degreed, non-licensed Shift Technical Advisors (STAs). Training is currently being developed to support the enhanced on-shift engineering role of the new STA.

- [47]Operator skills and knowledge at Zion and LaSalle are being upgraded through focused training on identified topics. Lessons learned at LaSalle and Zion are being provided to the other four sites for coverage during training.

4.4.4 *Getting Work Done Initiative*

Another Corporate initiative to raise performance to a higher NOD-wide standard is the "Getting Work Done" action designed to improve ComEd's ability to complete maintenance work at the sites. The Getting Work Done initiative includes:

- [48]A standard screening process has been put in place at all six sites to ensure maintenance work is properly classified and prioritized. This effort ensures work is performed with the proper controls in place.

- [49]Work planning is being evaluated to identify inefficiencies in the planning process that prevent work from being performed. [50]All sites are currently implementing a minimal work request process which enhances job planning for minor work.

- [51]A revised scheduling process has been designed and is currently being implemented at Braidwood. The other sites will implement this revised scheduling process by the end of 1997. The new scheduling process focuses on stabilizing the work scope four weeks prior to when the work is scheduled. Such scheduling allows for all departments to prepare for the work and avoid last minute misapplication of efforts.

- The execution subprocess of the initiative has been evaluated and resources provided to better accomplish work. Some support skills have been identified that will assist in emergent work issues being included into the work schedule when appropriate. [52]The amount of emergent work completed by the Fix-It-Now teams is measured to determine the effectiveness of the initiatives.

- [53]Performance measures are being developed to monitor and improve process performance in various areas. These measures are being standardized to permit comparison of performance between sites.

Results to date have shown that since August 1996, corrective maintenance backlogs at four of the six sites have been reduced. A reduction of past due critical preventive maintenance tasks at four of the six sites has been observed.

The support of our workforce is essential to success. Corporate and site management are placing greater emphasis on gaining workforce ownership of ComEd's performance improvement initiatives. We have recently communicated through a set of meetings, videotape presentations, newsletter articles, and letters from executive management to ensure that our employees are aware of our current situation and our plans. [54]Our CNOO, during his periodic visits (typically monthly) to the sites, conducts open discussions with groups of 15-20 employees regarding our plans, issues of concern, and steps that can be taken to improve. We believe that these actions will help all of us pull together to sustain improvement.

4.5 Corrective Action Program and Response to Lessons Learned

4.5.1 *Corrective Action Program*

[55]In order to ensure that corrective actions and responses to lessons learned are consistently and vigorously implemented throughout the NOD, a new corrective action program has been developed by representatives from all six nuclear sites and the NOD central office. These representatives reviewed successful corrective action programs in the industry to establish a new corrective action process for the entire ComEd nuclear program. [56]The new process includes several improvements over the current program. It clearly delineates and standardizes the threshold for problem identification through Problem Identification Form (PIF) initiation, and establishes common PIF screening criteria that provide greater ability to analyze PIF data.

[57]The new corrective action process will include human error reduction methodology, including standardized coding, problem identification, trend analysis, and root cause analysis techniques. To implement this process, [58]ComEd is training dedicated root cause analysts in root cause analysis techniques. [59]Groups of these trained individuals will be stationed at each of the nuclear plant sites and in the NOD central office. [60]Personnel will also be trained on the new corrective action process and on human error reduction techniques. These procedures and the attendant computer software have been implemented at Byron Station in March 1997, as a pilot effort. [61]The remaining sites have developed plans to implement this process during 1997.

In order to set and enforce management expectations relative to supporting the corrective action process, [62]the Station Managers have been designated as the accountable group to implement Corrective Action Program improvements, monitor corrective action performance and take appropriate follow on actions. They have been active in the review and approval of the newly developed procedures. Initial performance indicators have been selected for each stage of the corrective action process and baseline data has been taken for the month of February at Byron. [63]The information will be taken monthly and used to evaluate the effectiveness of corrective action process improvements as well as participation by each site in the process.

[64]Performance indicators have also been developed to monitor the timeliness of implementation, quality of the corrective actions, and the number of significant events which are repeated. These indicators are being tested at Byron. Site and NOD central management will take appropriate actions based upon performance and results.

[65]A NOD-wide common cause assessment to identify prevalent causes of problems identified in the NOD will be completed by the end of June, 1997. This first analysis will be based upon limited data because of the short time of implementation of common processes, however, it is believed that useful insight can be gained by performing this early evaluation. [66]Common cause analyses will initially be conducted on a quarterly basis.

An overview of the new NOD root cause investigation process has been provided at each site. [67]A training matrix for root cause investigators has been developed and necessary courses are underway to support implementation as required by the corrective action procedures.

4.5.2 *Standard Processes and Response to Lessons Learned*

A broader effort to ensure uniformity in the quality of processes and practices at our plant sites, and to benefit from lessons learned, is the use of Peer Groups across all sites. [68]Groups of representatives from each site and a full time support peer are assembled into Peer Groups to develop and implement safe, effective, simple, efficient and uniform processes and practices at each site. Peer Groups have been established to improve processes in the areas of Operations, Work Control, Outage Management, Configuration Control, Equipment Reliability, Training, and Management and Administration. Performance improvement teams are formed by the peer groups to develop and implement specific processes, procedures and practices.

For example, a team was formed to create improved and standardized approaches for power reduction and shutdown of our PWRs. As a result, a standardized shutdown activity sequence has been developed and has been used at Braidwood; its use will be extended to Byron and modified for use at Zion. This same team is working on developing a standardized startup activity sequence. Another team was formed in the Work Control area to improve the work process for minor maintenance. As a result, a more effective and efficient minor maintenance process has been implemented at all six sites. The Outage Peer Group is currently developing a standard pre-outage preparation plan that defines key milestones and performance indicators.

These new processes reflect safe and effective best practices and lessons learned from all of our stations. [69]Other peer groups and performance initiatives in the near term include:

- Operations Standards and Human Performance
- Five-Week Work Scheduling Process
- Periodic Maintenance and Surveillances

Also, Peer Groups have been used to address urgent problems. For example, when several control room problems were identified recently at Zion Station, the operations peer group convened to address actions that could be taken promptly at all sites. These actions are being implemented by each operations manager and have been confirmed by NOD Policy.

Some other mechanisms for disseminating lessons learned from within the NOD [70]include the utilization of electronic bulletin boards for Nuclear Operations Notifications (NON). ComEd's NOD utilizes such bulletin boards for the posting of ComEd Inspection Reports and other generic communication of mutual interest for each of the sites. Such endeavors provide ready access to information by all organizations within the NOD.

[71]In February 1997, a procedure was issued for evaluating and initiating NOD-wide action in response to operating experience at any of the ComEd nuclear stations. The procedure also covers response to operating experience items from non-ComEd stations. The procedure provides for review and screening of operating experience items, development of responsive action, and review and evaluation of effectiveness of responsive action.

Specific recent examples of NOD-wide response to lessons learned include use of the Dresden ISI results and the Zion Engineering and Technical Support Inspection results as the basis for Corporate-wide engineering improvement initiatives, and the use of the LaSalle and Zion ISA results and fundamental causes to ensure that NOD and site management plans are properly targeted. Other examples include establishing Engineering Assurance groups and performing top ten system reviews. We intend to continue to improve our programs and management involvement to learn from experience at each of the ComEd sites and outside utilities.

4.6 Corporate Oversight

[72]ComEd is strengthening its oversight of nuclear operations at all levels and instituting common indicators by which safety performance can be effectively monitored. Oversight at the Board level has been formalized in order to assist the Board of Directors in its responsibilities to provide oversight of the nuclear operations. The NOC is charged with reviewing and reporting to the Board on the safety, reliability, and the resource allocation both in the long and short term of the nuclear operations. Additionally, the Committee is to review and report on the effectiveness of the management of nuclear operations and the systems employed for the self identification of problems and potential problems, along with the appropriateness and timeliness of corrective actions. [73]Oversight at the Corporate and site levels are in the process of being revitalized to augment line management's continuous oversight of nuclear safety and conformance to ComEd's policies and performance goals. In addition, oversight will provide integrated tools for measuring safety performance, allowing site-to-site and industry performance comparisons, and providing earlier identification of emerging safety issues. Performance measures and a program for assessment of performance in the functional areas of operations, engineering, maintenance, and corrective action are being developed.

4.6.1 *NOD Executive Management Oversight*

The CNO is charged with responsibility for independent oversight and management of human and financial resources for the NOD. To ensure that NOD standards are upheld in these areas, the CNO has directed a number of the oversight improvements described below. In addition, the CNO has brought responsibility for nuclear program human and financial resources under the control of NOD management. For example, in the Human Resources area, NOD has taken the leadership role from the corporate office in labor relations, compensation and personnel performance assessment. This action has led to personnel management systems that are nuclear-specific and tailored to achieving the goals and objectives of the nuclear division. These changes ensure that key processes upon which our nuclear program relies are directly managed by NOD.

[74]The Nuclear Oversight Manager reports directly to the CNO and is responsible for keeping the CNO apprised on a timely basis of the performance of quality programs, adequacy of NOD central and site functions, and significant quality and safety issues. This organizational reporting alignment ensures that the CNO receives independent and direct feedback on nuclear operations performance.

[75]The CNOO conducts Management Review Meetings at each site focused on safety performance and the effectiveness of improvement initiatives. These meetings address trends of safety, performance, and cost indicators; results of third party (NRC and INPO) inspections; results of site self-assessments; status of material condition in the plant; outage planning and performance; and assessments of the quality of workforce product and training. These meetings provide executive management focus on continuing performance improvement, early input to the resolution of emerging problems, awareness of performance issues and improvements across all sites, and the opportunity to reinforce expectations and safety culture.

4.6.2 *NOD-Wide Nuclear Oversight*

The ISAT identified that oversight programs had not effectively evaluated plant performance and therefore had not successfully influenced constructive management actions for improved performance. Changes are underway to strengthen the centralized oversight function within the NOD central organization and at the sites. The intent of strengthened NOD-wide oversight is not to diminish the site oversight responsibilities, but to provide independent and consistent oversight of the performance of each site and the division as a whole.

[76]In order to revitalize NOD-wide oversight, the staff size is being increased and the assessment and audit programs are being formalized and expanded. The NOD audit and surveillance program is being developed to integrate with the site oversight and quality programs. This program will be in place by September, 1997. It is being redesigned to better ensure that the requirements of the Quality Assurance Topical Report are met. [77]In addition, a new quality oversight group at the Central Materials Inspection and Storage (C-Team) facility is being established.

The increased [78]NOD Nuclear Oversight staffing levels will support data analysis, performance monitoring, management and coordination of industry (peer) assessments, and assessments of emerging issues or special evolutions. [79]An integration of data and analyses from the station and corporate oversight organization will be performed to provide insight in regard to station and division performance. The first pilot report focusing on safety was issued in March 1997. [80]The procedure defining this program will be completed in June, 1997. [81]A formalized living schedule of audits and assessments is being developed at the NOD level to assist in the allocation of resources and coordination of audit and assessment activities. These actions are designed to ensure that oversight responsibilities and interfaces among NOD and site groups are well defined, integrated and effective.

[82]NOD Nuclear Oversight and Site Quality Verification (SQV) are establishing an NOD-wide standard analysis and reporting process. This process will be similar in structure to the NRC's Integrated Performance Assessment Process (IPAP). It includes performance measures for functional areas. In each functional area, it evaluates Safety Focus, Personnel Performance, Problem Identification, Analysis and Resolution, Equipment Performance, Material Condition, Programs and Procedures, and Quality of Work. The new process will incorporate both the NOD indicators described in Section 4.7 and additional leading, real time, and lagging performance indicators. [83]Emergent trends or issues will be reported to the SVPs, CNOO, and CNO on a monthly basis. [84]Quarterly, a more in depth analysis focused on NOD-wide issues will be performed and the results will be reported to the CNO and CNOO.

Utilizing industry experts and industry standards, [85]peer assessments will be performed to evaluate specific organizations, programs, or processes. Examples include the recent ISAs at Zion and LaSalle. Significant deviations from best industry practices will be identified and shared with relevant organizations. Utilizing team members from ComEd sites so that lessons learned are shared, team assessments may be performed prior to upcoming evolutions such as Unit start-up. [86]Assessments will be performed on emerging issues identified by other evaluation processes or performance indicators. Other assessments will be focused on the site quality organizations and their programs, processes and products. Assessment criteria will focus on specific performance areas, allow a comparison of performance to pre-established safety and quality standards, and assess the effectiveness of organizational performance of roles and responsibilities.

4.6.3 *Site Oversight*

In addition to NOD-wide oversight activities, several mechanisms are in place at each site. [87]Safety oversight at the sites by the SQV and Quality Control (QC) organizations includes the QC inspection and Quality Assurance (QA) audit activities prescribed by 10 CFR 50 Appendix B. Independent Safety Engineering Group (ISEG) functions of surveillance and safety review, and evaluation of site problem identification and corrective action programs. Also providing safety oversight at the site level are the PORC (or SRC) and the Safety Review Board (SRB) to be implemented at all sites. [88] Each site also has a group that evaluates the severity of events, and determines whether a root cause analysis is warranted. Processes are being implemented for evaluation of the effectiveness of corrective action.

Within the SQV and QC organizations, QC inspections, QA audits, and the ISEG function retain their traditional roles. [89]Monitoring of performance against the indicators, Corrective Action Requests (CARs), and industry experience, and review of site self-assessments will also be conducted within SQV. [90]The Safety or Management Review Boards consist of senior experienced outside experts and ComEd personnel who review site performance and meet with site management to discuss performance and provide comments and recommendations. [91]The SRBs evaluate station safety performance, corrective actions, and improvement plans. The SRB Chairmen will also provide input to the NOC of the Board. The site gains outside perspective and critical review of performance from this body.

[92]The PORC or SRC at each site is chartered to review safety related activities in order to assist management in assuring safe operation. The Committee is composed of senior site personnel from several disciplines and provides across-the-site review of safety issues.

4.7 Performance Measures, Criteria and Actions if Criteria Are Not Met

In the past, ComEd has made use of performance indicators and other tools at its nuclear stations to assess progress in improving performance and addressing weaknesses. However, these measures have been developed separately at each site, and have not been consistently measured or used on an NOD-wide basis.

In order to provide assurance that all stations continue to operate safely while sustaining performance improvement, [93]ComEd has established an integrated structure of performance measures, criteria, and actions to be taken if the performance criteria are not met. These include: (1) top-level indicators to be used in measuring progress in achieving our overall goal of performance equal to or better than industry peer averages; (2) NOD-wide indicators to provide more specific measurement of NOD and each site's progress in sustaining performance improvement; and (3) a process for responsive action in the event that the performance criteria established in (1) and (2) are not achieved.

These performance measures were selected to provide indication of whether we are operating safely and sustaining performance improvement. The use of NRC and World Association of Nuclear Operators (WANO) indicators provides a high level safety overview and indication of overall effectiveness in achieving improved performance results, and permits evaluation of whether we are reaching our overall goal of operating each site at a level consistent with its industry peers. These top-level indicators are augmented by more detailed NOD indicators that were selected based upon review of indicators ComEd has used in the past, review of indicators used by other nuclear utilities, and the experience of our management team, many of whom have used these indicators in other nuclear programs. They are designed to show how we are performing at a level of sensitivity and detail that timely corrective actions can be taken when performance trends surface, permitting us to resume tracking toward our overall goal. They cover the important operations, maintenance, engineering, and corrective action areas that must perform well for sustained improvement at each site. Collectively observed over time, these indicators will demonstrate whether we are correcting our problems, operating safely, and sustaining performance improvement.

[94]The indicators described below will be compiled monthly by each site's SQV organization, and assembled on an NOD-wide basis by Nuclear Oversight.

As described in Section 4.7.4 below, [95]we are also taking special measures to assess and monitor our performance to ensure that areas of weakness indicated by the LaSalle and Zion operational events are not present or are addressed at all of our nuclear stations.

4.7.1 *Top Level Industry Standard Indicators*

ComEd has selected an overall set of indicators to measure progress in achieving the goal of all nuclear units performing as well or better than the average of their peers by the year 2000. These indicators are standard measures used by the NRC and/or WANO, and are calculated on a consistent basis throughout the industry. [96]We have established expected performance criteria for each indicator. In any case where a criterion is not met, we will take the action described in Section 4.7.3. These indicators and criteria include:

1. Automatic Scrams While Critical (NRC)

   The number of unplanned scrams per year while critical. Examples include scrams from unplanned transients, equipment failures, spurious signals, or human error. Scrams occurring during the execution of procedures in which there was a high chance of a scram occurring, but the occurrence of a scram was not planned, are included. Performance criterion: Take action if there is more than one scram per unit per year.

2. Safety System Actuations (NRC)

   Manual or automatic actuations of the logic or equipment of either certain Emergency Core Cooling Systems (ECCS) or, in response to an actual low voltage on a vital bus, the Emergency AC Power System. Performance criterion: Take action if there is more than one safety system actuation per unit per year.

3. Collective Radiation Exposure (NRC/WANO)

   The total effective dose equivalent received by all personnel coming on site. Performance criterion: Take action if projected or actual results exceed site annual year end exposure goals.

4. Unit Capability Factor (WANO)

The ratio of available energy generation over a given time period to reference energy generation over the same time period, expressed as a percentage with both energy generation terms determined relative to reference ambient conditions. Performance criterion: Take action if projected or actual performance falls below year-end site goal. This criterion will apply to Zion and LaSalle following restart of their units.

5. Unplanned Capability Loss Factor (WANO)

The ratio of the unplanned energy losses during a given period of time to the reference energy generation, expressed as a percentage. Performance criterion: Take action if projected or actual results show capability loss > 5% above established year-end site target. This goal will apply to Zion and LaSalle following restart of their units.

6. Safety System Performance (WANO)

This indicator is calculated separately for each of the following three BWR systems and each of the following PWR systems:

- BWRs - high pressure injection/heat removal (high pressure coolant injection or high pressure core spray or feedwater coolant injection, and reactor core isolation cooling or isolation condenser systems)
  - residual heat removal system
  - emergency AC power system
- PWRs - high pressure safety injection system
  - auxiliary feedwater system
  - emergency AC power system

The sum of the unavailabilities of the components in each safety system listed above is divided by the number of trains in the system. Performance criterion: Take action if unavailability exceeds two times the INPO goal for any system.

7. Industrial Safety Accident Rate (WANO)

The number of accidents for all utility personnel permanently assigned to the station resulting in one or more days away from work (excluding the day of the accident), or one or more days of restricted work (excluding the day of the accident), or work-related fatalities, per 200,000 person-hours worked. Contractor personnel are not included in this indicator. Performance criterion: Take action if industrial safety accident rate exceeds established site target.

We will use these indicators as the overall measure of our progress in achieving sustained performance improvement. We may adjust or change these indicators as we gain experience and progress is made. These indicators will be measured at each site and for the NOD as a whole. They will be monitored by our CNOO, our CNO, and the NOC of the Board of Directors. The NOC is responsible for communicating any significant performance trends to the full Board. In addition, as described in Section 4.7.3, we will take action in the event that these indicators deviate from expected performance criteria.

4.7.2 *Nuclear Operations Division Performance Indicators*

Beyond the top-level industry standard indicators, [97]ComEd is establishing a comprehensive set of NOD-wide performance indicators to provide more specific measurement of NOD and all sites' progress in achieving results. Along with the top-level indicators, these NOD-wide indicators will be used consistently at all sites and reviewed monthly during the CNOO's Management Review Meeting at each site. These measures will permit comparison of performance and identification of trends between sites and for the entire NOD. These indicators will also be reviewed by the NOC of the Board.

Indicators that we have selected include:

Operations

- Operator Workarounds
- Out of Service Errors
- Human Performance Error Licensee Event Reports (LERs)
- Temporary Alterations
- Failed Technical Specification Pump and Valve Surveillances
- Unplanned Entries into LCOs
- Percent Contaminated Floor Space

Maintenance

- Non-outage Corrective Work Requests
- Percent Rework
- Outage Power Block Work Requests

Engineering

- Engineering Requests
- Engineering Requests Overdue

Corrective Action

Corrective Action Items

Overdue Corrective Action

Repeat Events

Number of PIFs Written

Other

Overtime Hours

Cited NRC Violations

We are in the process of establishing consistent definitions and performance criteria for these measures. As with the top-level indicators, in the event that the expected performance criteria are not met, we will take action as described in Section 4.7.3. [98]The definitions of these indicators, and the performance criteria associated with them, will be fully established by April 15, 1997, and will be available for discussion at the briefing of the Commission on April 25, 1997. They may be adjusted as experience is gained and circumstances warrant.

In addition to strictly quantitative performance measures, [99]we will monitor several qualitative indicators, such as employee concerns, allegations, and the results of a periodic safety culture survey. For each of these indicators, the absolute numbers are less important than trends and reasons for changes in the indicator. We will evaluate and respond to significant trends and changes in these measures.

4.7.3 *Responsive Action If A Criterion Is Not Achieved*

Collectively, achievement of performance criteria described above over time will indicate that sustained performance is occurring, that causes of previous failures to sustain improvement have been addressed, and that definite positive performance results are being achieved. To ensure that this occurs, as requested in the NRC 50.54(f) letter, [100]we have established the actions to be taken if the performance criteria are not met. These criteria and actions provide assurance that each of our plants will be operated safely and to a high standard.

In order to assure that effective and timely actions are taken, assessment of performance indicators and implementation of actions based on this assessment will take place at the site, NOD, and Board levels. Each of the performance indicators described in Sections 4.7.1 and 4.7.2 above will be monitored by the Site Vice Presidents, and will be reviewed during the periodic Management Review Meeting for each station. [101]Beginning in May and continuing monthly thereafter, each Site Vice President shall submit a letter to the CNOO reporting the status of each of his station's performance indicators for the previous month. Action in cases where a performance criterion is not met will be as follows:

- If a performance criterion is not met, a "variance report" describing the cause of the deviation will be presented as part of the next Management Review Meeting. This report will include a description of the actions underway or planned to improve performance.

- If a performance criterion is not achieved for two consecutive months, the Site Vice President's monthly report to the CNOO will include a written action plan to bring performance back into conformity with the criterion. The CNOO or Site Vice President may direct additional specific action, including: work standdowns, implementation of special work controls, appointment of root cause or investigation teams, assignment of additional personnel, special monitoring, or other appropriate actions up to and including plant shutdown. If the CNOO and Site Vice President determine that the cause of the deviation is not tied to deficient performance or that the deviation is acceptable for a period of time, they may reset the performance criterion or defer action for that limited time. Such a decision will be reported to the CNO.

- If: (1) a performance criterion has not been met for three months; or (2) responsive action has achieved insufficient progress over a sustained period, the CNOO will report this to the CNO. The CNO and CNOO shall establish a team, reporting to the CNOO. This team will assess causes and recommend: (a) further actions to restore performance; and (b) other actions that may be appropriate to the seriousness of the problem, such as standdown, staff augmentation, increased oversight, modified operations or shutdown. The results of the team's evaluation and recommended actions will be reported in the regular briefings of the NOC of the Board of Directors, which includes ComEd's Chairman/CEO, Vice Chairman, and President. The progress and success of this plan will be reported at each Management Review Meeting for the affected station. The NOC of the Board will also be notified when performance has been returned to conformity with the criterion.

- The CNO may request the Board to review resources available to resolve the performance problem that is preventing the criterion or action from being achieved, and allocate more resources or direct any other action which may be necessary. The NOC of the Board may also request such action at any time it determines that a prolonged and significant failure to achieve a performance criterion is occurring.

These actions will ensure that in cases where our expected performance criteria are not met, prompt and vigorous measures are taken to return performance to expected levels.

4.7.4 *Assessment of Performance in Areas of Weakness Demonstrated By LaSalle and Zion Events*

In light of operational events at LaSalle and Zion, we are placing particular focus on measurements of conservative operational decision-making, using an integrated set of quantitative and qualitative evaluation tools. These tools are designed to improve our capability for early detection of adverse trends in operational performance. These tools include:

1. [102]The peer group that has been formed to develop improved NOD-wide Operations programs, processes and standards (see Section 4.4 above) has developed a set of indicators for measurement of the safety and quality of control room performance. Each of these indicators will be used by site management to determine whether control room operations are being conducted in accordance with management expectations for conservative decision-making. In addition to the performance measures already discussed, these indicators include such items as: wrong unit/wrong train events; lit annunciators; control room caution tags; non-outage equipment out-of-service; human performance PIFs; and other indicators. Significant trends in these indicators will be reported at the Management Review Meeting conducted by the CNOO.

2. [103]To immediately determine whether the types of operational problems identified in the Zion and LaSalle ISA exist at other stations, the CNO has directed that the NOD Vice President of Nuclear Support (who headed the investigation of the recent Zion event) visit each of our sites to observe control room activities and review control room activities.

3. [104]Teams of peers from the Byron, Dresden, Quad Cities and Braidwood station will perform operations peer assessments to evaluate safety culture, conservatism of operational decision-making, and implementation of operations standards. Standard review plans and checklists will be used during these assessments. Reports of the results of these evaluations will be provided to the CNO, the CNOO, and the station's Site Vice President.

Collectively, these tools will help determine whether safe and conservative operational practices are being consistently implemented at each site and will ensure that adverse trends in this area are promptly detected and corrected.

5.0 SITE ACTIONS TO ACHIEVE SUSTAINED PERFORMANCE IMPROVEMENT

In the following six sections of this response, ComEd's performance improvement initiatives for each of its six sites are summarized. These summaries are presented in a common format and share the common goal of sustained performance improvement. At the same time, the current levels of performance, management challenges and corrective actions vary among the sites, and to that extent, the scope and detail of the improvement initiatives can be expected to and do vary among the sites. The discussion to follow addresses the performance improvement initiatives for Dresden, Quad Cities, LaSalle, Zion, Braidwood, and Byron. For each individual site, the discussion provides a summary description of: (a) recent plant performance; (b) the pertinent backgrounds and experience of key site management team members; (c) the resources dedicated to improvement initiatives; (d) the elements of long-term improvement plans; (e) important future actions, including where applicable, special actions to support plant restart or in response to external assessments; and (f) monitoring mechanisms to ensure effective implementation of improvement initiatives. The actions described in these sections reflect our current activities and plans and may be modified as circumstances warrant.

5.1 Dresden

5.1.1 *Summary of Performance*

Dresden Station has been on the NRC's Watch List since 1992. Plant safety performance was generally weak early in this period when plant material condition impacted plant reliability, and problems with human performance and other key processes resulted in plant events.

Over the past two years, improvements have occurred in plant material condition, conduct of operations, management and the overall organization. Safety performance has improved with programs, policies, and staff in place to support continued improvement. The NRC ISI Inspectors recently recognized Dresden Control Room operations as among the best they had observed.

Improvements have also been seen in the working environment with respect to radiation exposure and contamination control. These improvements can be attributed to source term reduction improvements, reduction in the contaminated area in the plant, and effective implementation of the site ALARA program.

In maintenance, we have improved a number of maintenance processes, enhanced the knowledge, skills and abilities of maintenance personnel, and improved the overall material condition of the plant. However, the effectiveness of these improvements has been reduced by the number of safety and non-safety related emergent work activities. This emergent work burden has adversely impacted our ability to conduct planned work and decrease backlogs to a desired level. Recent changes to performance management and measurement within work control are expected to improve work management decisions, resource allocation and utilization, and the rate of work completion.

In Engineering, management has focused on improving engineering experience, capabilities, and effectiveness. Progress has been made in a number of areas, including the reduction of configuration management and modification request backlogs. These efforts, however, have been overshadowed by problems in design control that were highlighted in the recent NRC ISI.

Since 1994, a substantial effort has been devoted to improving human performance at the site, and positive results have been achieved. However, Station management understands that there is more to do in this area. Management is continuing to take aggressive actions to reduce personnel errors and improve procedure compliance. Actions to improve the corrective action program and root cause analysis are a necessary element of this effort.

Dresden performance issues are being addressed through the resource application, long-term plans and other actions described in Sections 5.1.3, 5.1.4 and 5.1.5 below.

5.1.2 *Management Team*

Establishing a strong management team has been the key to achieving and sustaining performance improvement at Dresden. Over the last two years, senior management positions at Dresden have been filled with proven performers from other nuclear stations both within and outside the ComEd system.

Dresden Station's management team is led by the Site Vice President, who has over 32 years of naval and commercial nuclear power experience. Prior to Dresden Station, he served as Vice President Nuclear Operations at an operating BWR. Our Plant Manager joined the Dresden team in 1995, after having served as the Corporate Maintenance Manager, Superintendent of Instrument and Controls, and Manager of Plant Maintenance at other nuclear stations, and in various positions in the U.S. Navy nuclear program. The Site Engineering Manager has 27 years of experience in both naval and commercial nuclear power. He has held various engineering roles (Project Manager, Assistant Plant Manager-Maintenance, Manager-Nuclear Station Engineering) with other nuclear utilities and has also worked for a national laboratory. The Site Maintenance Manager has held a variety of positions at several nuclear facilities including: Radiological Engineer, Health Physics Supervisor, Radwaste Supervisor, Radiation Protection Manager, and Maintenance Superintendent. Additionally, he obtained Senior Reactor Operator Certification. Dresden's Operations Manager has 18 years of nuclear plant experience, including: Chemistry/System Engineer; Lead Chemist; Radiation Protection Manager; Operating Engineer; and assessor for the Site Vice President.

Overall, these individuals have over 100 years of both Navy and commercial nuclear power experience. Additionally, they are supported by the remainder of the Dresden management team which has over 200 years of experience in both Navy and commercial nuclear power.

5.1.3 *Resources*

[105]In order to ensure sustained improvement at Dresden Station, the new management established a formalized business planning process which led to the development of the 1997 Operational Plan. This Plan sets forth initiatives to improve station performance in concert with the NOD priorities of Safety, Production and Cost performance. The 1997 Operational Plan targets the areas of human performance/error reduction, material condition, and outage execution as specific performance goal areas to ensure accountability toward performance improvement and effective execution of the plan.

[106]For 1997, the site has established a $175 million dollar operating and maintenance budget. This budget represents an increase of approximately 18% over the 1996 budget and an approximate 13% increase from actual 1996 expenditures. Approximately 29 million dollars is associated with the following significant improvements:

- Material condition improvements
- Vendor-supplied Equipment Technical Information Program (VETIP) backlog reduction
- Performance Centered Maintenance (PCM) program development
- Work control/outage activities
- Large motor repairs
- Housekeeping
- 24 month fuel cycle
- Design engineering activities
- Engineering program initiatives

5.1.4 *Long Term Improvement Plans*

In August 1994, a critical, systematic review was performed to determine the causes of Dresden's performance problems and identify means for correcting them. Based on this review, the Dresden Plan was developed as the overall blueprint for raising the level of station performance. The Dresden Plan covered 1994 through 1996, and included actions to correct the most significant weaknesses in five key areas: Management and Leadership; Material Condition; Human Performance; Performance Monitoring; and Radiation Protection.

In 1996, the site completed implementation of the Dresden Plan and transitioned to a formal business planning process. This process led to the development of the 1997 Operation Plan which forms the basis for implementing action to sustain improvement at Dresden Station.

From September 1996 through December 1996, the NRC conducted an ISI at Dresden Station. The purposes of the ISI were to evaluate the effectiveness of the corrective action programs, to provide an independent assessment of conformance to the design and licensing basis, to evaluate the conduct and effectiveness of maintenance activities, including work processes, post-maintenance testing, and maintenance rule activities, and to provide an independent assessment of operational safety performance. The NRC inspectors noted that commitment to improve performance is evident in plant material condition, conduct of operations, and management and organizational changes.

Dresden received the ISI Report in late December 1996 and [107]we have completed the process of developing a comprehensive set of actions to address the deficiencies identified by the ISI. Dresden's letter to the NRC dated February 26, 1997 provides our detailed response to the identified deficiencies. A number of these actions, for the key ISI findings, have been underway for some time, while others were developed following the interim debriefs and the public exit meeting held with the NRC ISI team. The following summarizes some of the actions taken in response to the ISI.

Corrective Action Program

The ISI noted that while problem identification had generally improved and corrective actions had succeeded in resolving several historical performance problems, weakness remained. [108]Several steps have been taken to improve the identification and correction of problems, and several more are planned.

In April, 1997, Dresden will implement Phase I of the new ComEd standard corrective action process. Phase I includes the use of common site procedures, an interim database, and associated training for site personnel. [109]Phase II of the standard corrective action process will be implemented in the fall of 1997 and will include the use of the final corrective action database and associated training for site personnel.

To clarify thresholds at which problems are to be reported, [110]Dresden Administrative Procedure (DAP) 02-27, *The Integrated Reporting Process (IRP)*, has been revised to provide more concise direction for site personnel regarding Performance Improvement Form (PIF) initiation criteria. This revision also incorporated Maintenance Preventable Failures (MPF) as a criterion for PIF initiation. This procedure revision became effective on October 25, 1996. [111]Site personnel are being trained to ensure understanding of the revised initiation criteria.

Dresden Engineering management has taken several steps to encourage PIF initiation within the Engineering Department. Engineering Senior Management met with engineering organization personnel in order to communicate expectations for PIF initiation, and a review of the PIF database for 1996 was performed. [112] Nuclear Engineering Procedure (NEP) 10-3, "Disposition of Design Basis Discrepancies," was issued on January 20, 1997, to clearly delineate management expectations for PIF generation by Engineering personnel when design discrepancies are identified. During the first eight (8) months of 1996, the engineering organization initiated an average of 49 PIFs per month. During the last four (4) months of 1996, the average increased to 93 PIFs per month, almost double the previous number, indicating that personnel are now more sensitive to PIF initiation requirements. [113]We will continue to monitor PIF initiation levels to ensure that problem identification and reporting continue.

To ensure strong root cause analysis in Radiation Protection (RP), a contracted Root Cause Specialist was assigned from October 1996 through January 1997. In February 1997, a permanent ComEd employee [114]with significant Radiation Protection experience was assigned to the position. This individual is responsible for error trending and performance of quality self assessments, and will be included in the review cycle of corrective action approval. This individual also ensures that actions taken for NTS item closure are complete and meet the intent of the commitment. This individual will remain on staff until RP Department performance is satisfactory in the area of root cause and corrective actions.

Finally, the station PORC has been a positive influence on safety at Dresden Station. Reviews of root cause evaluations, operability evaluations, special procedures and start-up reviews by the PORC have been performed in a thorough, critical and conservative manner.

Design Control

The ISI identified problems in design and calculation control. [115]On November 12, 1996, ComEd submitted its action plan for ensuring appropriate design control. This plan was confirmed by an NRC Confirmatory Action Letter on November 21, 1996.

[116]Dresden assembled a dedicated team of senior experienced engineering personnel to identify and review key operating parameters against system calculations for the 12 most risk significant systems. This action was taken as part of a commitment made to the NRC on November 8, 1996 regarding actions to ensure current status of key safety systems. Dresden's letter to the NRC dated February 28, 1997 transmitted the site's verification report of key parameters for the twelve risk significant systems.

[117]A program of audits of the Nuclear Steam Supply System supplier and selected Architect/Engineers (A/Es) has been established to determine the quality of design control and calculations. An audit of the principal A/E has been completed which identified instances of technical errors and administrative and review process weaknesses. That A/E is installing improved programs and procedures for design control and calculation quality. [118] Several additional audits are scheduled during 1997.

Emergent Work and Work Management

The ISI identified improvements in maintenance processes, the knowledge, skills, and abilities of maintenance personnel, and a significantly improved overall plant material condition, but also noted that the effectiveness of many of these improvements was reduced by the number of emergent work activities. Several steps have been taken to reduce the amount and impact of emergent work and to improve work management so that both emergent and planned work are completed more quickly and effectively. These steps include:

- A review was performed to determine which systems were most frequently associated with emergent work. From this review it was concluded that, in general, systems with higher backlogs of corrective maintenance work accounted for most emergent work. In particular, a significant proportion of past emergent work was attributable to the Fire Protection System and the Off-Gas System, both of which have had substantial corrective maintenance backlogs.

- The Station experienced a high level of emergent work in the weeks following startup of Unit 2, in September, 1996, but emergent work levels have declined since that time. In October, 1996, there were a total of 140 emergent work items for the Station; this level was reduced to less than 70 items per month in November and December 1996. This is still an area needing improvement.

- [119]To reduce work start delays, the Operations Department in September, 1996, was reorganized to provide better focus on accomplishing Out-of-Services to support scheduled work activities. Additional changes to improve operations performance and coordination in support of scheduled work are continuing. In addition, in January 1997, the Operations Department implemented a process for pre-approval of start of work for specific work packages, which works to minimize delays while waiting for work-start approval at the Work Execution Center.

- Additional contract support has been brought in to develop performance measurement and management tools in the area of work management. [120]A new set of these tools has been designed and implemented to provide daily information to work control and maintenance management to highlight performance strengths and weaknesses. Benefits expected include improved work management decisions, better resource allocation and utilization, and an increase in the rate of work completion.

Understanding of Management Expectations

The ISI determined that Dresden management efforts to reinforce individual accountability for safety performance and to improve the capabilities of station personnel appeared to be effective in addressing long-standing obstacles to performance improvement, and that global expectations such as accountability, strictly adhering to procedures, and teamwork were reinforced through multiple methods of communication. At the same time, the NRC ISI team noted that, due to management, supervisory, and process changes, management expectations for the accomplishment of work were not well understood in some cases, and that communication of overall standards and expectations was noticeably less visible in the design engineering area. Actions recently taken or planned to communicate overall standards and ensure that work performance expectations are clearly understood include:

- [121]Operations has established a fixed period of time in normal cycle training to discuss and reinforce management expectations. Operations Shift Managers utilize routine crew briefs to reinforce management standards and personal accountabilities associated with those standards. Routine orders are generated by senior operations managers.

- Since September 1996, [122]new maintenance supervisors have been provided training on Station and Maintenance Standards and Expectations. This has specifically included expectations in the RP area. Maintenance and Station Standards and Expectations are reinforced through weekly staff meetings, management and supervision, pre-job briefings and scheduled weekly shop meetings.

- Since June 1996, [123]Engineering has conducted accountability meetings to review the status of system improvement plans, projects and programs. An engineering expectations meeting was conducted on February 7, 1997, with the Site Vice President, Site Engineering Manager, Engineering Chiefs and Engineering Vice President to review and ensure common understanding of significant issues, site and Corporate Engineering deliverables, goals, projects, indicators and plans. Additional meetings with the Engineering Staff were conducted in March 1997, to ensure that Engineers clearly understand the expectations of management with respect to performance standards.

- To ensure radiation workers understand radiological requirements, [124]since October 1996, a "Greeter" has been established at the entrance to the RPA. The Greeter challenges workers before they enter the plant to ensure that they are familiar with the requirements of their Radiation Work Permit (RWP) and to remind workers of high radiation area control responsibilities.

As noted above, Dresden has taken or has planned action to address a number of the most important issues identified by the NRC ISI team. [125]Dresden is implementing and tracking these actions through our Nuclear Tracking System and/or the Dresden 1997 Business Plan, and are reviewing progress in the monthly performance assessment meetings.

5.1.5 *Future Actions*

Dresden acknowledges the areas for improvement identified in the NRC's letter of January 27, 1997, and has two broad initiatives as a result.

First, as explained above, [126]the 1997 Dresden Operational Plan provides the foundation for improvement actions at the site. It sets forth initiatives to improve station performance, and targets human performance and error reduction, material condition, and outage execution as specific areas for improvement. The Operational Plan includes specific performance goals to ensure accountability toward performance improvement and effective execution of the plan.

Second, as described in our ISI Response dated February 26, 1997, [127]we have implemented or have underway actions to address the root causes identified by the ISI. These actions include a substantial upgrade, on a Corporate basis, to our corrective action program, as well as site-specific training to ensure that problems are identified, properly analyzed, and effectively resolved. In addition, we have taken action to ensure that the deficiencies, unresolved items, and observations identified within the body of the ISI Report are fully addressed.

[128]For 1998, we intend to use the Operational Plan approach to continue addressing performance problems and sustain performance improvement.

5.1.6 *Monitoring Mechanisms*

Dresden Station utilizes numerous mechanisms to monitor performance and evaluate effectiveness of actions taken at the Station. [129]On a monthly basis, the site distributes a management performance report that clearly summarizes performance for the previous month in a clear and concise format. The Dresden Operational Plan also contains performance targets by which progress in achieving performance improvement is measured. Further, [130]the senior managers meet with the CNOO once per month to review performance results and plan corrective action for the site.

[131]Site departments also have their own internal performance measures, for example an internal event free performance clock, assessment results, rework, errors per operating crew, and personnel exposure.

[132]To ensure all site personnel are aware of performance issues, a site newsletter is distributed three times per week. Several performance measures are reported in each issue (e.g., event free performance, radioactive material control problem event free days, industrial safety performance and product cost performance). [133]Additionally, the Site Vice President conducts an all-station meeting every month to discuss performance results success in resolving performance problems, and other issues of importance.

5.2 Quad Cities

5.2.1 *Summary of Performance*

Quad Cities implemented a three-year Course of Action (COA) improvement initiative in early 1994. The COA was a comprehensive plan for long-term improvement which included actions to strengthen: management and leadership; functional organizations such as operations, maintenance and engineering; and specific areas such as corrective action, self assessment, procedural adequacy and compliance, material condition, and safety system performance. The COA has been effective in achieving performance improvement in many areas, as shown in many of the station's key performance indicators. As the COA cover letter stated, the COA was initially based on performance goals which met or exceeded those accepted by the industry at the time. As the plan has evolved, performance has improved, the standards have been raised, such that "World Class" goals have been realistically set for achievement by the end of the next three year period. The management team in place at Quad Cities is committed to excellence and continues to raise the standards as each new performance plateau is achieved.

The first phase of the COA involved putting the right management team in place to drive improvement in accountability and performance. The immediate strategy focused on correcting material condition deficiencies, radiation protection issues, problem identification weaknesses and human performance deficiencies.

Material condition has improved, especially with respect to those areas most important to safe operation. Quad Cities has initiated corrective action over time; examples include: (1) reduced Control Room Corrective Maintenance Tasks by 62% (from 58 in January 1996 to 22 in January 1997); (2) reduced Operator Workarounds by 50% (from 104 in May 1995 to 51 in January 1997); and (3) increased Safety System Reliability by 33% (unavailability decreased from .027% in January 1996 to .018% in December 1996).

Radiation Protection improvement initiatives have: (1) reduced the number of Personnel Contamination Events by 80% (from 341 in 1994 to 70 in 1996); and (2) reduced Contaminated Floor Space by 50% (from 23.2% in 1994 to 10.9% in 1996). However, overall radiation exposure remains high and new strategies to lower dose are part of the 1997 Operational Plan.

Problem identification has improved as the station has generated over 9,000 PIFs over the past three (3) years. Because the threshold for problem identification has been recognizably lowered, problem identification is trending in the right direction.

Human performance improvement initiatives are also beginning to be realized. Operator personnel error related LERs have decreased from eleven (11) in 1993 to three (3) in 1994, one (1) in 1995 and zero (0) in 1996. Improvement has also been noted in declining trends in operation's significant out of service events, operation's component mispositioning events, operation's wrong unit/train component events and causal factors assigned to operations. However, lower-level events continue to occur and are being addressed by operations management.

Improvement in the aforementioned areas is beginning to be reflected in overall station performance. Reactor water quality is being maintained more consistently. The number of Engineered Safety Features Actuations has been reduced by 88%, from 16 in 1992 to 2 in 1996. The station achieved a 122 day dual unit run on February 28, 1997, when Unit 2 was shutdown for a scheduled refueling outage. Following the voluntary shutdown this past summer, both units have operated well, experiencing the second longest dual unit run in the plant's history.

While these performance trends are clearly in the right direction and indicate our previous efforts are producing positive results, we are not satisfied with our present performance. Improvement is still needed and is underway to strengthen material condition, technical support and corrective action program implementation. The resource application, long-term plans and other actions described below address these issues.

5.2.2 *Management Team*

In 1994, the new Site Vice President immediately began to rebuild the leadership team. Proven managers were recruited to fill key positions including, Station Manager, Site Engineering Manager, Site Quality Verification Director, Radiological/Chemistry Superintendent, Maintenance Superintendent, Work Control Superintendent and Regulatory Affairs Manager.

The Site Vice President joined ComEd in April of 1994, after completing a successful turnaround of a Region I single-unit BWR plant. Prior to joining ComEd, he was Site Vice President, Nuclear Operations and Station Director. He has over 32 years of combined Naval and commercial nuclear power experience. He obtained a Senior Reactor Operator (SRO) license and has managed Nuclear Operations, Training and Plant Support Departments. The Station Manager came to Quad Cities with over 25 years of experience at a highly-regarded Region II utility where he was Station Manager during the successful turnaround of a dual-unit PWR. He obtained a SRO license at both of the utility's PWR sites and spent most of his career in various operating positions including Operations Manager, Outage Manager, Operating Shift Supervisor, and Senior Reactor Operator. The Operations Manager has over 15 years experience at ComEd in Operations, Maintenance and Engineering, and has also obtained a SRO License. The Maintenance Manager joined ComEd in January of 1995 with over 12 years total and six (6) years experience as Maintenance Manager working with the Station Manager at the same dual unit PWR. The Engineering Manager has over 30 years experience in commercial nuclear power, having worked for two (2) Nuclear Steam Supply System (NSSS) vendors for a total of 17 years and nearly 12 years at the same Region II utility as the station and maintenance managers, where he was Manager of Nuclear Technical Support, Component Support and Inspections, Component Specialists, Nuclear Plant Support and Non-destructive Examinations. The Site Quality Verification Director Superintendent has over 23 years of nuclear power plant experience, including eight years as Quality Assurance Manager of a BWR plant for a utility in Region I.

Three quarters of the key managers are experienced in plant turnarounds. The average senior manager has over 25 years experience and the management team has over 300 years of total Navy and commercial nuclear power experience. Three quarters of the senior managers have SRO licenses or certificates. Nearly half of the leadership team members have completed long and successful careers in the Nuclear Navy. Three of the senior managers were Commanding Officers. Nearly half of the senior managers have completed the INPO Senior Nuclear Plant Management Course.

Another important aspect of the team is that it includes "bench strength" and solid succession planning. Recently when the need arose to elevate the stature of the Training Organization, the Radiological/Chemistry Superintendent was appointed as training manager. The senior management position vacated in the process was filled from within by the Shift Operations Supervisor.

5.2.3 *Resources*

[134]The station has been provided with sufficient resources to continue its planned improvements in 1997. Quad Cities has a 145 Million dollar Operating and Maintenance Budget for 1997. This represents a 20% increase over 1996. 28.5 Million dollars is associated with improvement programs. Our current plan (which may be changed as necessary) includes improvements such as:

- UFSAR Compliance Review
- Instrumentation and Control Calculations
- Electrical Cable Program
- Reactor Recirculation System Valve Packing Design Change
- Fuse List
- Master Equipment List
- Drawing Update
- Engineering and Maintenance Backlog Reduction
- Control rod Drive Hydraulic Control Unit Rebuilds
- Design Bases Reconstitution and Validation
- Validation of Design Basis Documents
- Development of New System Design Basis Documents
- Development of New Topical Design Basis Documents and
- Safety System Functional Inspections

[135]The station's budget for capital improvements in 1997 is 25 Million dollars. Planned improvements include:

- Reactor Recirculating Pump and Motor Refurbishments
- Torus Suction Strainers
- Electrical Cable Replacements
- Core Instability Monitoring System
- Control Room Upgrades and
- Zinc Injection

5.2.4 *Long-term Improvement Plans*

Although [136]the station is completing the three year COA, a similar ongoing process will be used to chart the course for improvement initiatives in virtually all aspects of its business. Each year, the COA was translated into annual management and operating plans. [137]Annual operational plans will continue to be used to manage future improvements.

Plan Development

The current station improvement initiatives are reflected in the "Quad Cities Station's 1997 Operational Plan." This Plan is a key element of the change management process.

The Operational Plan is divided into four sections. The *Operational Planning Process* section describes the planning process employed to develop the Operational Plan. The *Gap Analyses* section describes the current performance of the plant's *key performance measures* in the areas of Safety, Production and Cost, the *gap* between current and desired (targeted) performance, and the analyses performed to identify strategies, strategic components and management initiatives/improvement efforts. The *Action Plans* section describes the actions resulting from management initiatives and improvement efforts. This section is "living;" as improvement efforts progress through their analyses, the content will be updated as needed. The discussion of future actions below summarizes the most important improvement initiatives. The *Financial Summary* section contains O&M and capital summaries for the indicated projects based upon 1997 priorities.

As stated earlier, the first step in the Quad Cities performance improvement process was to build a leadership team. Next a process to set targets and monitor progress was installed. The Integrated Quality Effort (IQE) program was established in 1993, and refined to include lessons learned from the first year of implementation. The IQE data provides site managers with useful tools to monitor performance, identify, and correct deviations from goals as quickly as possible. Performance indicator windows are developed and incorporated into IQE Windows performance indicating process. Subsequent to initial development, indicators are reviewed and revised as necessary.

[138]Mechanisms were put in place to communicate expectations and standards, provide feedback on performance and receive feedback from the organization. Meetings between the Site Vice President and each cognizant manager are held to review the manager's performance during the previous month. These meetings measure the effectiveness of management in setting standards, reinforcing defined performance expectations, and achieving desired results. [139]The Site Vice President typically conducts a monthly meeting with all site personnel. [140]The Site Vice President and Station Manager conduct a monthly meeting with all Department Heads and First Line Supervisors.

5.2.5 *Future Actions*

[141]Improvement plans are underway to improve the Station's material condition, technical support and corrective action program implementation.

Material Condition

Improving the station's ability to resolve material condition and equipment issues is a key "strategic" component of the Quad Cities Station 1997 Operational Plan. [142]Improvement initiatives include: scheduling of work requests in the station backlog; aligning of system surveillances and Preventive Maintenance (PM) work into their respective work week window; backlog reduction; achieving goals in key material condition indicators; improving execution of maintenance work processes; and reduction of equipment related Operator Compensatory measures.

Technical Support

Substantial efforts are contained in the 1997 Operational Plan to improve technical support. These efforts and additional actions to be taken include: [143]establishment of a Plant Response Team; improved training for engineers on the station licensing basis and root cause analysis; and reduction of the station design drawing backlog and open design changes.

[144]The quality of Root Cause Analysis (RCA) will be improved by the development of additional system historical packages and by further training of specific personnel in RCA techniques. The historical packages provide the engineer with equipment failure histories. This information allows the engineer to focus the root cause effort on the components with the highest failure rates. [145]This training is scheduled throughout 1997. An effectiveness review of the training program will be conducted to determine future training requirements and any required changes to the program. Systems selected for historical package development include Recirculation, 125 VDC, and Instrument Air.

[146]A substantial effort to prioritize and schedule engineering resources is in progress so that the proper focus can be placed on the corrective action issues. The Plant Response Team will deal with day-to-day emergent issues. The mission of this team will be to deal with emergent issues in a timely manner to allow the production arms of engineering to focus on process, equipment reliability and longer-term initiatives.

Effective Corrective Actions

ComEd has undertaken a NOD initiative to improve the Corrective Action Process in all six nuclear sites. [147]The initiatives include the adoption of common NOD procedures or instructions on the identification, root cause determination, tracking and trending, resolution, and measurement of effectiveness of corrective actions. These procedures and instructions have been reviewed, approved, and implemented at Byron and are currently being adopted by each of the respective station management teams.

5.2.6 *Monitoring Mechanisms*

Implementation of the COA was closely managed and periodic status reports were submitted to the NRC. The status reports were submitted in December of 1994, January of 1995, May of 1995, March of 1996 [148]and the close-out letter will be submitted in April of 1997. These reports reflect significant progress in executing the COA. In many cases, the actions taken have been judged to be effective in producing the desired result. In some cases, however, the actions have not been fully effective and work continues in the 1997 Operational Plan. Specifically, we are seeking to improve the station's material condition, work management and technical support.

The 1997 Operational Plan is also being closely managed. Quad Cities expects that the plan will be successfully implemented as shown by the three previous management plans. In addition to the normal implementation process, this year the station managers have teamed together to establish some short term milestones. In January, the senior managers worked together and identified twenty-one goals for the organization to focus on. The goals were selected based on their priority and included goals which measure progress in addressing previous performance problems.

The station also uses a number of other mechanisms to monitor progress and measure effectiveness. [149]In addition to the IQE discussed above, the station prepares a monthly status report including information from all key functional areas. Information includes actions taken, self assessment activities, challenges and lessons learned as well as dozens of individual performance indicators and trends. [150]Also on a monthly basis, the Vice President and CNOO meet with station management and reviews station performance and progress.

Quad Cities has established a solid track record of implementing its management plans over the past several years and, based on the results discussed above, the actions which have been taken are generally producing the desired improvement.

5.3 LaSalle

5.3.1 *Summary of Performance*

Over the past two years, LaSalle has experienced declining performance. Early in this timeframe, performance was declining as demonstrated by ineffective corrective action, degraded material conditions, human performance errors, procedure adherence deficiencies, inability to complete work and difficulties in both configuration management and configuration controls. This declining performance resulted in several instances of escalated NRC enforcement actions, and lower SALP and INPO performance ratings.

While attempting repairs to the service water system, in June 1996, a safety-significant event occurred which indicated that performance weakness continues to exist in a number of areas. The CNO initiated a comprehensive ISA of performance issues at LaSalle (and Zion). The ISA, described in detail in Section 4.1 of this attachment, identified four fundamental causes of performance weaknesses that needed to be addressed.

Beginning in the fall of 1996, a set of targeted improvement initiatives was undertaken to reverse the performance trend and demonstrate that LaSalle could initiate and complete its improvement plan, the 1996 Operational Plan. Resources were dedicated to the identification, prioritization, and correction of material condition deficiencies. Additional resources were allocated to ensure continuing improvements in plant conditions and program effectiveness would be realized.

On September 22, 1996, a sticking servo caused a Unit 1 turbine valve to fail open. Rather than troubleshoot the servo on line, LaSalle management decided to shut Unit 1 down for repairs. Subsequently, on September 24, 1996, the NRC Inspection of LaSalle's Service Water System raised concerns regarding the operability of a Residual Heat Removal Service Water heat exchanger. Based on LaSalle's preliminary review, Unit 1 was placed in cold shutdown on September 26, 1996, pending resolution of this issue. LaSalle Unit 2 was shutdown on September 20, 1996, for its scheduled refueling outage.

Since that time, [151]LaSalle management has decided not to restart either unit until the material condition, operator performance and engineering support issues are resolved. The following actions have been undertaken to address these performance issues.

- [152]In engineering, functional performance reviews of systems important to safe and reliable operation are being performed to ensure that any deficiencies are identified and corrected prior to startup. These reviews include a functional performance comparison to the design basis. Risk significance is a key element in system selection. This effort will also include selected functional testing of the systems to confirm performance capabilities. We are also performing reviews to identify modifications that may have been performed outside the design change process.

- In the area of station teamwork, progress has been made in relations between management and workforce personnel. For example, efforts to engage the workforce have produced Instrument Maintenance teams that identify and resolve problems.

- [153]In operations, training materials and methods are being reviewed and improved in order to provide high quality, additional training for operating personnel. In addition, to improve operator performance, we are clarifying training objectives, evaluating the effectiveness of our training instructors, and upgrading our simulator scenarios.

- To improve corrective actions, we have applied additional resources and are holding personnel accountable for the quality of root cause analyses and the effectiveness of the corrective action taken.

- To reduce challenges to the operators, we are reducing the number of operator workarounds, temporary alterations and control room deficiencies.

- To improve human performance, we are emphasizing individual accountability and focusing on communications across management ranks and vertically throughout the organization.

[154]Many of these actions are incorporated in the LaSalle County Station (LCS) Unit 1/Unit 2 Restart Plan.

In January, 1997, LaSalle was placed on the NRC's Watch List as a result of material, human performance, and engineering deficiencies. The NRC recognized that a number of management and organizational changes and improvement initiatives have been made at LaSalle, but noted that their effectiveness had not been demonstrated. Actions underway to address the causes of LaSalle performance problems are described in Sections 5.3.3, 5.3.4, and 5.3.5 below.

5.3.2 *Management Team*

LaSalle has developed a strong management team with a track record in management of nuclear power plants, including ComEd plants, other commercial plants, and U.S. Navy plants. The average senior manager has over 20 years experience and the Site Vice President and his direct reports account for a total of over 191 years of experience. Fifty-nine percent of the senior managers have SRO licenses or certificates. Nearly 31% have completed careers in the U.S. Navy and an equal percentage have completed the INPO Senior Nuclear Plant Management course.

In August of 1996, the new Site Vice President joined ComEd from the Institute of Nuclear Power Operations (INPO), after having most recently served as Vice President of Training and Education and Executive Director of the National Academy of Nuclear Training. The Site Vice President joined INPO after serving a 20-year career in the U.S. Navy's Nuclear Power Program. The Plant General Manager has more than 20 years experience in nuclear power. The Unit 1 Plant Manager has 30 years of experience in the management and supervision of commercial, Naval and Government facilities. His experience includes positions as Plant Manager, Manager of Reactor Operations and Maintenance Recovery Manager at other nuclear power plants. The Unit 2 Plant Manager had obtained an SRO License at a PWR and served as the Operations Manager, Maintenance Manager, and Work Control Superintendent. The Engineering Manager has 29 years of nuclear experience and has been involved in many performance recovery programs.

On December 12, 1996, the LaSalle Site Vice President announced the decision to transform the LaSalle organization into a unitized organization. The unitization of the station organization enables management to be dedicated to each of the two units. The result of the unitization transition will be more focused management attention on operations, maintenance and work control for each unit.

The unitization will also result in a significant increase in the number of supervisors and managers who will coach, mentor, train and instill a focus on the station priorities. With an increase in supervisor and worker involvement, and a clear focus, the improvement efforts should result in improved performance. To fill the additional manager and supervisor positions, the Site Vice President has recruited a number of experienced personnel external to ComEd. Many of these managers and supervisors have demonstrated experience in turn-around situations.

5.3.3 *Resources*

LaSalle Station has identified the financial resources necessary to improve the station's performance. [155]Resources have been dedicated to the identification and prioritization of material condition and design basis deficiencies. This effort has resulted in the refurbishment of several major pieces of equipment and the resolution of other critical deficiencies. Efforts to upgrade material condition of LaSalle Station are continuing. [156]LaSalle O&M funding for 1997 has been identified based on the Restart Plan to support major improvement initiatives as well as daily operation to ensure that the plant can be properly operated, maintained and improved . The current O&M budget of $160 million is under review to assess the impact of ISA issues and restart-related work. Our commitment is to provide the resources that will achieve and sustain necessary improvements.

Currently planned improvements include:

- 24 month refuel
- Design basis document improvement
- IDATA
- System functional reviews
- Setpoint improvements
- UFSAR upgrade
- 480 volt switchgear
- Improve technical specifications
- Getting work done initiatives
- Painting
- Material Condition Improvement Plan
- Maintenance backlog reduction
- Plant labeling
- Operating and maintenance procedures
- Mixed waste disposal
- Station heat improvements
- Design reviews
- Contract work analysts
- SBM switches

[157]Staffing actions to fill position vacancies and increase staff experience levels are continuing. In addition, resources have been budgeted for staff augmentation on a temporary basis during peak activity periods. The improvements to the physical plant, upgrading of programs and backlog reduction initiatives began in 1996 and will continue. Under leadership of the new management team, planning was formalized with development of the LCS Unit 1/Unit 2 Restart Plan. The resources necessary to implement the improvement actions in the LCS Unit 1/Unit 2 Restart Plan were then estimated and reconciled against the 1997 O&M budget in late February 1997. Evaluation and approval of funding needed for the remainder of 1997 is in progress.

5.3.4 *Current and Future Actions*

Response to the ISAT

An ISA was performed during the fall of 1996. Final results were published on February 18, 1997. The results of the ISA confirmed that LaSalle had identified the majority of their weaknesses and had established corrective actions on the appropriate issues. One of the benefits of the ISA was the depth of understanding as to why the weaknesses exist. [158]LCS Unit 1/Unit 2 Restart Plans address the ISA issues requiring short term focus. [159]Long-term issues will be addressed in future Operational Plans.

Response to LaSalle - Specific Issues in NRC's January 27, 1997 Letter

The weaknesses identified as a result of the June 1996 Service Water Sealant Injection Event have corrective actions that were incorporated in two improvement plans. [160]The recommendations from the root cause investigations of this event are tracked in the Management Review Meeting report reviewed monthly by the Site Vice President and the CNOO. [161]The completion of the LCS Unit 1/Unit 2 Restart Plan will address all of the issues discussed within the January 27, 1997 NRC letter. [162]In the future, Operational Plans will be used to continue to build on the improvement efforts initiated from the LCS Unit 1/Unit 2 Restart Plan.

Corrective Action Program

Problems with ineffectiveness of corrective actions have primarily been caused by poor corrective action process implementation. Corrective actions are in progress to strengthen accountability and improve implementation. [163]LCS will adopt and implement the new NOD-wide Corrective Action Program later this year.

Restart Program Overview

The Restart Program consists of an integrated set of complementary programs and activities that will result in the highest level of confidence that power operations will be safely initiated and LaSalle's units returned to reliable full power operation in a controlled manner. The initial station focus is on Unit 1; however, the restart process and most of the specific actions are also applicable to Unit 2.

[164]The Restart Program consists of four phases as follows:

- Work to be completed prior to unit restart;
- Work completion;
- Restart and Operational Readiness Evaluation; and
- Unit Restart and Power Ascension.

Work to be Completed Prior to Unit Restart

[165]Comprehensive evaluations are being conducted to define the scope of work requiring completion prior to unit restart. The resulting work scope includes significant actions relating to LaSalle's personnel, processes and plant equipment to correct identified deficiencies and improve operational safety performance.

Decisions to include specific items in the current LaSalle Unit 1 (L1F35) outage work scope are made using a process that engages both senior site management and station personnel and is based on a foundation of ensuring operational safety. Potential work items are being identified from many sources including the following:

- Internal and external assessments;
- Review of backlogs (e.g., maintenance, engineering, operations, corrective action program PIFs);
- System functional performance reviews;
- System readiness reviews,
- Commitments review, and
- Personnel and plant performance trends.

Site management is responsible for establishing the scope of activities requiring completion prior to unit restart and for verifying that the work has been successfully completed. Individual work items are evaluated by the line organization, and their recommendations for inclusion in the outage are reviewed by the supervisor/manager. [166]Hardware oriented items are evaluated by the Scope Control Committee and items that are significant in scope are reviewed by the Senior Management Review Committee (SMRC). The SMRC also reviews the scope of significant non-hardware work items, e.g., determining the scope of the System Functional Performance Reviews and the need to either expand or truncate this review program.

Work Completion

Work required for unit restart is completed under the direction of line management using plant processes and procedures for execution and control of work. Implementation schedules are established and managed by the Outage Management organization for all plant hardware oriented activities and major non-hardware activities. Work completion is documented consistent with plant process and procedural requirements with oversight for effective job completion provided by line management and LCS oversight organizations.

Restart and Operational Readiness Evaluation

[167]A thorough assessment of the readiness of the LaSalle plant, personnel, and work processes to safely begin unit restart and initiate power operation will be completed and used as input in the decision by the Site Vice President to proceed with unit restart. The self-assessment to be performed by each LaSalle organization is an element of the LCS Unit 1/Unit 2 Restart Plan and will culminate in a recommendation from the Plant General Manager to the Site Vice President that unit restart be initiated. [168]Detailed guidance for the conduct of self-assessments will be developed as part of this LCS Unit 1/Unit 2 Restart Plan. [169]An additional element of this process will be the development and approval of a Restart and Power Ascension Plan that summarizes the key actions, milestones, management approvals and contingencies that will be implemented during the restart process. Additional input regarding the readiness of the LaSalle plant, personnel and work processes will be obtained from the PORC, independent oversight organizations such as the SRB, SQV and from other inputs at the discretion of the Site Vice President.

Unit Restart and Power Ascension

Following approval from the Site Vice President to initiate unit restart with the intent to proceed to full power operation, [170]plant operators will initiate restart and power ascension in accordance with an approved Restart and Power Ascension Plan.

5.3.5 *Long Term Improvement Plans*

Long-term safety improvement at LaSalle requires achieving significant improvements in the five key performance areas. A brief summary of LaSalle's current performance in these areas and improvement actions in progress at this time are provided below. [171]Many detailed action plans are being developed throughout the station to implement these improvements. The Restart Action Plans, discussed above, support improvements in these five key areas while implementing the specific corrective actions required for unit restart. In addition, improvement initiatives are being refocused to ensure that the results of the ISA described in Section 4.1 are also accommodated.

Management Leadership and Effectiveness

Management leadership at LaSalle has not been effective in establishing the management systems, safety culture and performance improvement environment necessary to simultaneously achieve excellence in nuclear safety, production and cost. Therefore, the following actions are being taken:

Performance Improvement Actions:

- Recruiting management personnel with industry experience at plants that have achieved excellence in nuclear safety, have participated in significant performance improvement programs and/or who have demonstrated the ability to sustain high standards for safety performance;

- [172]Implementing a limited unitization of the Station organization (Operations, Maintenance and Work Control) to better focus management and staff resources on resolution of specific problems, improve communications between management and the plant staff and to speed improvements in human performance and the plant material condition; and

- Establishing the basic fundamentals of effective management such as high standards for performance, individual accountability, organizational teamwork, monitoring of specific performance measures and regular management follow-up.

Oversight and Assessment

The implementation of oversight and assessment activities at LaSalle has not consistently assured that potential safety and performance problems are identified, appropriately evaluated and fully resolved in a timely manner. Therefore, the following actions are being taken:

Performance Improvement Actions:

- [173]Consolidating safety assessment and other oversight functions to provide organizational focus and broadened oversight responsibilities. A new management position has been established to focus this effort and to drive safety performance improvement;

- [174]Implementing regularly scheduled department self-assessment reviews with the Site Vice President and the Plant General Manager to reinforce line management responsibility to establish high standards for performance, identify and resolve their problems and performance weaknesses, and to implement an environment of continuous self-assessment and improvements;

- [175]Establishing the SRB and re-focusing the PORC to provide a higher standard for plant performance and to implement a more rigorous and critical review of plant activities and work products; and

- [176]Creating an Engineering Assurance function, and staffing it with personnel experienced in system and design basis management, to ensure that engineering work products meet performance expectations and to provide the foundation for sustained improvements.

Human Performance

Fundamentals of good human performance have not been effectively implemented at LaSalle resulting in operational safety performance below industry standards. Examples of less than acceptable human performance at LaSalle include unclear procedures and/or not following procedures as written, not consistently implementing self checking as a routine job activity, not accepting personal accountability for each and every job activity, not implementing a questioning attitude that exemplifies a strong safety culture and not effectively communicating job requirements and status between organizations. Therefore, the following actions are being taken:

Performance Improvement Actions:

- [177]Implementing definitive management actions to reinforce expectations for human performance and to solidify the site focus on safe operations, e.g., insistence on procedure adherence and stop work actions to focus on human performance errors and key lessons learned;

- [178]Reallocating personnel and reassigning responsibilities to ensure supervisors spend more time coaching, mentoring and reinforcing standards for performance in their work groups;

- [179]Developing and using performance indicators that highlight key areas of human performance weaknesses, e.g. maintenance rework, operator human performance errors, out-of-service errors;

- Ensuring that personnel follow procedures and initiate procedure revisions to correct the procedures in cases where they cannot be effectively followed as written.

- [180]Performing an independent review of key engineering work products (e.g., operability evaluations, safety evaluations and root cause analyses) using experienced external engineering personnel as a method to both raise the job performance standards and train LaSalle personnel on how to achieve those standards; and engaging the work force in identifying and resolving the barriers in work practices, processes and procedures that can potentially lead to human errors.

Critical Work Processes and Programs

Critical work processes and programs that are used to achieve safe and reliable operation have not been fully effective due to barriers such as cumbersome or confusing process controls, inadequate trending and monitoring, poor performance measures and an insular approach that did not take advantage of industry lessons learned. Therefore, the following actions are being taken:

Performance Improvement Actions:

- [181]Implementing work control process improvements to allow work to be efficiently completed in the field and to minimize the occurrence of inadequate work packages;

- [182]Including critical work processes and programs in the scope of department self assessment activities and implementing self-assessments focused on specific programs, e.g., Out-of-Service Program and the Inservice Testing (IST); and

- [183]Developing performance measures for critical work processes to measure the effectiveness of their implementation and to highlight areas of potential weaknesses, e.g., Out-of-Service Program.

- [184]Implementation upgrades in the Corrective Action Program to ensure problems are identified, causes are determined, corrective action implemented, and effectiveness of corrective action is evaluated.

Plant Material Condition

The LaSalle material condition does not meet industry standards for excellence as indicated by the size of maintenance backlogs, occurrence of repetitive equipment problems, number of operator distractions (operator workarounds, temporary alterations and control room deficiencies) and system performance history and trends. Therefore, the following actions are being taken:

Performance Improvement Actions:

- [185]Implementing aggressive actions to fix plant deficiencies through the Material Condition Improvement Program and resolution of operator distractions through completion of the Restart Plan;

- Using the Corrective Action Program to drive identification and resolution of potential plant material condition deficiencies through review, evaluation and trending of PIFs;

- [186]Redefining the System Manager job requirements and performance expectations to exclusively focus on system management, i.e., ensuring that each system is capable of performing its design functions on a reliable basis; and

- Raising standards for acceptable plant material condition through in-plant walkdowns and inspections.

5.3.6 *Monitoring Mechanisms*

[187]LaSalle is using a number of mechanisms to monitor progress and measure effectiveness. The Site Vice President and Plant General Manager conduct regular self-assessment meetings to monitor restart preparation. The station conducts frequent Restart Plan Review meetings. During this meeting restart action plan status is reviewed. [188]The station has a monthly Management Review Meeting (MRM) at which the Site Vice President and CNOO review the performance of key functional areas. The MRM is also reviewing Restart Plan effectiveness. [189]The station has scheduled a SRB meeting in April 1997, to review the status and effectiveness of the LCS Unit 1/Unit 2 Restart Plan. These reviews are targeted at measuring progress in resolving the causes of the September 1996 event and other performance problems.

5.4 Zion

5.4.1 *Summary of Performance*

From 1994 to 1996, Zion's performance generally declined, and initiatives to upgrade operator performance, improve material condition, and efficiently plan and execute work had limited success. The improvement trend that had been evident in 1993 was not maintained following the dual unit outage that ended in Spring, 1994.

In February, 1996, the NRC rated Zion a Category 3 station in the SALP area of Operations, citing inconsistent operator performance marked by frequent personnel errors, especially toward the end of 1995. The operational performance problems had a number of contributors, including a lack of procedural adherence and inattention to detail. Many of the errors led to lapses in the proper control of plant configuration, a problem also noted in the previous SALP report. Operational errors and unplanned configuration changes continued throughout 1996. Corrective actions were either ineffective or untimely, and as a result, the NRC issued an escalated enforcement action to Zion in August 1996. A public meeting was held in October, 1996, at the NRC's request to discuss additional operational errors. On February 21, 1997, an operational event occurred involving inadequate control of reactivity changes during a reactor shutdown. In this event, problems were identified with the command and control of shift activities, crew communications, the execution of on-shift responsibilities, operator training at maintaining the reactor at very low power levels, and inadequate corrective actions to precursor events.

Also during 1995 and 1996, numerous equipment problems adversely affected plant operation. The maintenance backlog problem was compounded by chronic work process deficiencies, an inadequate preventative maintenance program, the limited effectiveness of work planning and control processes, and the inadequate quality of routine work activities. The number of equipment workarounds was an unnecessary challenge to operators. Efforts to make lasting improvements in this area were complicated by a continuing failure to consistently determine the root cause of problems and take effective corrective actions.

In the engineering area, a comprehensive inspection in July-August, 1996 identified significant deficiencies in the overall execution of engineering activities. A weak modification process, inadequate safety and operability evaluations, lack of control of the Technical Specification Interpretation process, inadequate resolution of recurring equipment deficiencies, and poor procedure adherence and quality reflected significant weaknesses in engineering support to the station. On March 12, 1997, the NRC issued an escalated enforcement action as a result of these findings.

In the fall of 1996, ComEd commissioned an ISA of Zion performance. The ISA described in Section 4.1 of this attachment, identified four fundamental causes of performance deficiencies. Zion's performance problems, including those identified by the ISAT and in the NRC's January 27, 1997 50.54(f) letter, are being addressed as described in Sections 5.4.3, 5.4.4, and 5.4.5 below.

In January, 1997, the NRC placed Zion on the watch list, citing concerns with operational errors, plant equipment problems, weaknesses in engineering activities, and continuing deficiencies in radiation protection and the control of radioactive material.

To arrest the declining performance, in August, 1996, ComEd began to put a new management team into place to drive improvement in accountability and performance. As described later in this section, essentially all of the senior managers at Zion are now new to ComEd or have new jobs at Zion. [190]Enhanced communication of management expectations for staff performance occur at weekly performance review meetings for all senior managers at the department head level and higher. Augmented and strengthened management review and oversight of engineering work was established. Work standdowns were initiated when several significant errors occurred. And, importantly, significant resources were devoted to identifying the root causes of current performance weaknesses. Further short-term and long-term actions to effect performance improvement are addressed in more detail in a subsequent paragraph.

5.4.2 *Management Team*

Zion Station has recently experienced significant changes in leadership, with the addition of many individuals with proven experience at effecting improvements at other sites. Also, [191]Zion has recently put in place a unitized organization to speed improvement efforts. This organization change consists of a limited unitization of the Station organization, focused on Operations, Maintenance and Work Control. Unitization is a short-term organizational approach to provide increased management oversight and to aid performance improvement initiatives. With this organizational structure, managers will spend more time in the plant observing operations, meeting with workers and removing barriers that impede work. Dedicated unit work teams will support specific units, allowing workers to concentrate on issues specifically related to their unit. The unitization also has provided the opportunity to bring additional proven leaders with fresh perspectives into the Zion organization.

New senior management positions have been created for the Plant General Manager, Unit 1 and Unit 2 Plant Managers, Unit 1 and Unit 2 Operation Managers, and Unit 1 and Unit 2 Maintenance Managers and Work Control Managers. [192]The existing organizational structure, within the Maintenance and Operations organizations will essentially be replicated for each unit, with some few exceptions related to specialization of responsibilities for some individuals. This new organizational structure will provide approximately 8 additional positions.

The management team is led by the Site Vice President who has approximately 12 years of commercial nuclear power plant experience. His background is strong in maintenance and operations. Prior to Zion Station, he was the Vice President for Nuclear Energy at a utility and had previously been the Plant Manager at another utility. In his previous assignments, he has demonstrated the leadership required to effect performance improvements. He served 20 years in the United States Navy and held a SRO license. The Plant General Manager has approximately 18 years of nuclear power plant experience. He was appointed the Plant General Manager on March 4, 1997. Prior to this recent promotion, he had served as the Zion Unit 2 Plant Manager from January 20, 1997 to March 4, 1997. He will retain his responsibilities as the Unit 2 Plant Manager until the Unit 2 Plant Manager position is filled. Prior to Zion Station, he spent his entire career at another multi-plant nuclear utility, where he last served as the Manager of System Engineering. Prior to that, he was the Manager of Operations and Maintenance and also held an SRO license. The Unit 1 Plant Manager has approximately 24 years of nuclear power plant experience, and worked most recently as a utility's Division Manager of Nuclear Operations. He had previously held positions as the Manager and Assistant Manager at a nuclear power plant and held an SRO license.

Zion has a management team with strong experience in management of nuclear power plants. The senior managers have an average of over twenty years of experience with nuclear power plants. Twelve of the sixteen most senior managers have held SRO licenses or certificates. Seven have had prior experience in the United States Navy Nuclear Power Program. Four have completed the INPO Senior Nuclear Plant Management course.

5.4.3 *Resources*

[193]The station has been provided with sufficient resources to complete its planned improvements in 1997. The Operating and Maintenance budget for Zion for 1997 totals $157.6 million dollars. This represents a 30% increase over the 1996 budget, and a 5% increase over actual 1996 year end spending levels. [194]The station's budget for capital improvements in 1997 is $17.7 million dollars, an increase of $5.9 million dollars over last year.

Staffing levels are also being increased. The permanent staff is expected to increase by approximately 7% over 1996 levels, to a staffing level of 931 full time equivalents. [195]In addition, resources have been budgeted for contract personnel and staff-augmentation, on a temporary basis, during peak activity periods.

Among the key improvements currently funded are:

- Backlog Reduction in Several Key Areas
- Work Execution Improvements
- UFSAR Reviews
- Design Bases Reconstitution and Validation
- Reactor Coolant Pump Motor Refurbishment
- Safety System Reviews
- Procedure Improvements

5.4.4 *Improvement Plans and Actions*

To specifically address certain of the concerns with the 1995-96 operational performance, in September, 1996, Zion implemented a short term intervention plan designed to address immediate needs for improved operational performance. Actions in this plan focused both on plant operations and on the support necessary to the workforce in the field to eliminate operational challenges and events. The plan had five major strategies, including: (1) improving the management and implementation of the surveillance program; (2) improving the prioritization and scheduling of work to focus attention on actions to remove operating challenges; (3) improving the ability of the operators to use plant procedures; (4) improving configuration control processes; and (5) resolving high priority material condition problems.

By the end of 1996, Zion had improved its performance in some areas, including significantly reducing operator workarounds by over 60%. The number of temporary alterations and open temporary procedure changes against frequently used operating procedures were substantially reduced. The material condition of the Radwaste System was measurably improved, although much remains to be done. However, Zion continues to [196]experience recurring events caused by inadequate procedures, failure to follow procedures, and by ineffective and untimely corrective actions. The 1997 Operational Plan contains significant actions to resolve these continuing performance concerns.

[197]To improve performance in planning, scheduling, and conducting routine maintenance, Zion management refocused efforts to more effectively implement a "12 week rolling" work planning and scheduling process. Through this process, corrective and preventative maintenance and planned equipment tests are integrated into a single schedule that maximizes maintenance effectiveness. During the 12-week planning process, each critical planning step is monitored and tracked against regular milestones. Two new managers with proven success in execution of the rolling schedule process were hired to ensure the process is thoroughly adopted by the entire station. Some improvement occurred as seen by two examples: (1) The backlog of control room indicators with deficiencies was reduced by 50%; and (2) the number of overdue preventative maintenance tasks for safety related equipment was reduced by 80%. The 1997 Operational Plan contains a sustained focus on efforts to better plan, schedule, and conduct work.

To resolve the concerns raised during the 1996 inspection of engineering support, the Engineering Department reviewed almost 200 Safety Evaluations and all open Operability Assessments for quality and content, revised the Safety Evaluation procedure and added additional checks and balances to the process. They completed the documentation necessary to close the work packages of several long standing open modifications. The Technical Specification Interpretation process was strengthened and other engineering procedures were revised and improved. Most importantly, they added additional resources and engineers to improve their effectiveness. Nevertheless, [198]a key area of focus for improvement in the 1997 Operational Plan is additional improvement in engineering support. As noted in Section 4.3 of this attachment, additional actions were initiated in 1996 and will continue in 1997 at all six sites to address concerns with engineering quality, the accessibility and quality of design basis information, and system readiness.

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As a short term plan to improve the corrective action process, the threshold for generating PIFs was lowered, and daily line management involvement in their review and resolution was increased. Over 5000 PIFs were generated in 1996. Additional individuals were added to the Event Screening Committee, and new criteria for establishing the significance level of PIFs for root cause investigations were established. Reviews of lower level PIFs for adverse trends were begun, and effectiveness reviews of completed corrective actions were conducted. Zion is not satisfied with performance in this area. The 1997 Operational Plan contains additional actions to improve the effectiveness and timeliness of corrective actions, in order to reduce the number of recurring events. [200]Notably, in May, 1997, Zion Station will implement the enhanced Corrective Action Program, using the program that has been developed by representatives from all six ComEd sites and the corporate office as a model. This program is further described in Section 4.5 of this attachment.

The 1997 Operational Plan consists of 6 strategies which provide a broad framework for the action plans that will implement improvements at Zion station. The strategies are:

Conduct of Operations

This strategy focuses on improving plant operations and safety performance. In this strategy, [201]shift crew performance will be improved by implementing high performance standards, a management observation program to feedback performance improvements to Operations and improved shift and external communications. In addition, [202]enhanced support will be provided to Operations by establishing improved support processes (surveillance control, OOS and status tracking, reliability risk management, and plant labeling) for shift operations that will provide assistance to the crews in eliminating personnel errors and plant challenges. Finally, [203]a front-end process will be established to ensure quality procedure revisions are issued to the field. In addition, [204]standards and practices for the station radiation protection program will be upgraded.

[205]Performance Improvement Management

This strategy addresses how station performance will be assessed to assure improvement. The strategy is implemented through action plans increasing management oversight of field activities, implementing an effective self-assessment program, improving the PIF and root cause analysis processes, and improving the management of the station's formal commitment tracking system.

Getting Work Done

This strategy addresses fundamental work processes and the management of work to eliminate barriers, improve equipment availability, reduce work request backlogs, and establish a high state of material condition. [206]Work management processes will be clarified and streamlined in this strategy and training on these processes improved. The Operations Work Control Center concept will be used to improve the control of work activities. Action Request and Work Request backlogs will be screened, prioritized and reduced. Multi-disciplined teams will physically walkdown plant structures, systems, and components to identify undocumented material deficiencies. Post maintenance tests will be more accurately identified. Station resource utilization and outage schedule adherence will be improved.

Engineering and Technical Support

This strategy improves engineering and plant support [207]by prioritizing and managing the work necessary to support plant goals. It addresses long-standing material condition issues and provides more systematic approaches to measuring equipment and system performance, supporting operations and maintenance, and correcting plant deficiencies. The strategy will establish a process to categorize and prioritize the backlog of open engineering work, and will improve the overall quality of Safety Evaluations. The System Engineering support program will be revised to be consistent with the best industry practices.

[208]Management and Personnel Development

This strategy develops the capabilities and depth of the organization. This includes training, skills development, outside recruiting, and a substantially increased management involvement in the accredited training program. Required management and supervisory skills will be identified, personnel will be evaluated against these attributes, and appropriate development activities will be conducted. Instructor skills and training lesson plans will be upgraded. The System Engineer training program will be upgraded. The strategy will also address upgrading craft skills and qualifications.

Design Basis Management

This strategy enhances the configuration management program to control the station design bases, and ensures that the UFSAR, Technical Specifications, and the station procedures are accurate, complete and consistent. [209]The processes and procedures used to control the traceability, integrity, consistency, and retrievability of design basis information will be improved, and periodic assessments of the program effectiveness will be conducted.

5.4.5 *Future Actions*

As noted in Section 4.1 of this attachment, at the end of 1996, a comprehensive review of station performance was conducted through the completion of an ISA by a team of outside experts. The ISA team reviewed and validated the findings from many other existing evaluations (ComEd SQV audits, INPO evaluations, and NRC inspections) and results (trend reports and self-assessments). The specific findings of the ISA team were used as a foundation from which to derive the 1997 Operational Improvement Plan and its six strategies. The Plan is prioritized to implement the actions required in 1997 to first arrest declining performance, and then to implement longer-term actions to achieve and sustain nuclear excellence.

In January, 1997, Zion was placed on the NRC Watch List. Because the ISA team reviewed and validated the findings of earlier NRC inspections, the concerns cited by the NRC in placing Zion on the Watch List were already addressed in the development of the 1997 Operational Plan. For example, [210]NRC concerns with personnel errors, operational performance, configuration control problems, and radiation protection procedures will be addressed by the 1997 improvement strategy entitled "Conduct of Operations."

[211]The effectiveness of work planning and control processes, quality of routine work activities, and equipment problems challenging operations will be addressed in the strategy entitled "Getting Work Done." [212]Engineering issues will be addressed within the strategies entitled "Engineering and Technical Support" and "Design Basis Management."

The publication of the ISA team's report and the placement of Zion on the NRC Watch List have heightened the sense of urgency in completing the 1997 improvement strategies. Additional resources, particularly in the engineering area, are being provided to speed improvement efforts.

The NRC conducted an Augmented Inspection of the events surrounding the February 21, 1997 operational event. On February 25, 1997, a Confirmatory Action Letter was issued by the NRC describing their concern with apparent performance deficiencies during the event and confirming certain actions to be taken by ComEd. The results of the NRC inspection, and those of a separate and independent investigation by ComEd of the event, have identified numerous issues that must be corrected and improved regarding supervisory oversight, communications, the execution of onshift crew responsibilities and other matters. ComEd and Zion Station management have agreed that this event represented a significant breakdown in fundamental areas. [213]ComEd management has committed to keep both units shutdown until corrective actions have been taken to ensure safe operation. These corrective actions regarding personnel performance, along with the results of the ComEd investigation of the event, will be submitted to the NRC in response to the Confirmatory Action Letter. The 1997 Operational Plan will also be modified as appropriate to address the depth of issues surrounding this event.

5.4.6 *Monitoring Mechanisms*

[214]Day-to-day management of each strategy within the 1997 Operational Plan will be assigned to a Zion manager who will be responsible for assuring satisfactory progress. [215]Each strategy manager will manage the overall performance of the related action plans, and report the performance results to the management team. The strategy manager will also control changes, additions, and deletions to the related action plans. [216]The Site Vice President will establish expectations for performance results, monitor plan results, establish accountability, and provide overall plan leadership.

Each of the action plans has an assigned action plan manager. [217]The responsibilities of the action plan manager will be to develop the implementing plan and ensure that it is effective. In reviewing the action plan, the responsible manager will verify that it can be implemented and is capable of achieving its objectives.

[218]The Zion management team (Site Vice President and Senior Managers), as assisted by the strategy manager, will provide a forum for review of plan effectiveness. The results of the strategies, and the removal of any barriers to successful completion of the action plans, will be discussed at weekly review meetings.

[219]Site Quality Verification will provide independent assessments of the 1997 Operational Plan. Their assessments will focus on the success in achieving the results specified in the action plans and on verifying that the results ultimately support the strategies and key performance measures. SQV will provide assessment reports to management at the weekly performance review meetings.

[220]The site communications director will prepare graphical posters of the key elements of the plan and periodically post plan performance results. The intent is that all site employees will see visible, high-level results from the plan as progress occurs through 1997. Periodic major milestones and results will be communicated through internal written media.

[221]On a monthly basis, the site presents key performance indicators to NOD senior management at the Management Review Meeting. Key site performance measures include INPO indicators, NRC inspection program performance, human performance as measured by event free operation, industrial safety accident rate, Self Assessment activities, material condition improvement efforts, and outage readiness, work planning and execution indicators.

5.5 Braidwood

5.5.1 *Summary of Performance*

Over the past two years, Braidwood has experienced generally good performance. Early in this time frame, management noted a decline in Braidwood Station's performance. Indicators of this declining performance included several escalated NRC enforcement actions and lower SALP and INPO ratings. Contributing to this decline were degraded material conditions, a lack of accountability in the Corrective Action Program, procedure adherence deficiencies, and difficulties in both configuration management and configuration control.

Beginning in early 1996, a set of targeted improvement initiatives was undertaken to reverse this performance trend. For example, resources were dedicated to the identification and prioritization of material condition deficiencies, improvement of the corrective action program, and the reduction of procedure adherence events. Steps were also taken to establish and enforce expectations regarding maintaining the plant in accordance with the design. Sections 5.5.3, 5.5.4, and 5.5.5 below discuss our improvement initiatives more fully.

5.5.2 *Management Team*

Braidwood has developed a strong management team with a track record in successful management of nuclear power plants, including ComEd plants, other commercial plants, and U.S. Navy plants. The average senior manager has over 22 years experience. All of the senior managers have SRO licenses or certification.

In June of 1996, the new Site Vice President joined ComEd after serving as Operations Vice President at a SALP 1/INPO 1 plant in Region I, and before that, serving in the U.S. Navy nuclear power program over a 22-year career. The Station Manager has more than 20 years experience at ComEd, during which he served successively as Station Control Room Engineer (SCRE), Master Mechanic, Operations Manager, and Maintenance Superintendent. The Operations Manager has served as a SCRE, Operating Engineer, and Shift Operations Supervisor at Byron Station over a 15-year period. The Maintenance Manager has more than 22 years experience which includes positions at Braidwood as Site Construction Superintendent, Assistant Superintendent Work Planning and Work Control Superintendent. The Engineering Manager spent 17 years at Sargent & Lundy where he was involved in the design of Byron and Braidwood. He joined ComEd in 1994, where he served as Assistant Site Engineering Manager prior to assuming his current position.

5.5.3 *Resources*

Braidwood Station is financially positioned to sustain the improvement realized to date, and to continue building upon these improvements. [222]Major improvement initiatives are funded, and the level of funding to support daily operation is sufficient to ensure that the plant can be operated, maintained and improved according to the site objectives. To illustrate, the overall site budget has increased by approximately 42% over the 1995 budget level.

[223]Staffing levels are being increased based on best-performer benchmark data. Sitewide, the permanent staffing is expected to increase by approximately 10% from the 1995 budgeted levels, to a staffing level of 925 FTEs. [224]In addition, resources have been budgeted for staff augmentation on a temporary basis during peak activity periods.

The physical plant improvements, program upgrades and backlog reduction initiatives begun in 1996 are funded to continue throughout 1997. Thus, the operation and improvement of Braidwood Station is resourced to a level that gives high confidence that sustained improvements will continue to be realized.

5.5.4 *Long Term Improvement Plans*

In 1996, management noted a decline in Braidwood Station's performance and took action to arrest this trend. Senior Station management conducted a gap analysis in mid-1996 which identified Material Condition, Corrective Actions, Human Performance, and Outage Performance as the salient areas for improvement. Strategies were developed to improve Braidwood's performance in each of these areas.

The primary elements of the improvement strategies and accompanying action plans for each area of improvement are described in short form below.

Material Condition

Three action plans were developed:

1. [225]The Getting Work Done (GWD) Plan used dedicated work teams (Fix-it-Now Team and a Work Analyst Team) to reduce work backlogs and improve schedule adherence on work tasks. The Fix-it Now (FIN) Team is utilized to protect execution of the weekly work schedule by assuming responsibility for all emergent work requirements that arise during the week. They walk down the jobs, plan and produce the work package, track receipt of material, schedule and execute the work. If the job is beyond their capability, the FIN team will coordinate with the principal work group and work planning to establish the best plan for accomplishment of the work. [226]The Work Analyst Team has been superseded by a new team that includes Braidwood and Byron Station in a combined effort to model the work practices between the two sites and develop a Standardized Work Procedure.

2. [227]The Fix Long Standing Problems Plan implemented plant changes to resolve and reduce temporary alterations, operator workarounds, equipment focus items and other priority issues.

3. [228]The Improve Work Execution initiative was created to look at the actual performance of work and develop ways to provide a better work plan to the work force as well as improve lessons learned from the execution phase. The initial teams of Improve Daily Work Assignment, Improve Daily Job Statusing, Improve Shift Turn Over, Establish Proper Pre-job Briefs, and Establish Proper Post-job Critiques completed their work as of January 1997. An ongoing effort on the Improve Work Execution initiative is continuing to develop the best set of indicators to track continuous improvement of execution of work. To date, schedule adherence is significantly improved with work carried over from one week into the next significantly reduced.

Human Performance

The Out of Service (OOS) and Configuration Control efforts resulted in improvements in the removal, return, and maintenance of the plant systems in accordance with the plant lineups. [229]To reduce the number of errors associated with the OOS process, the following actions have been taken:

- Re-location of the OOS writers to enhance communications;
- Development and management monitoring of performance indicators in the conduct of OOS activities;
- Advance preparation of OOS prior to the execution week;

- Providing guidance on the bundling of OOS requests; and
- Dedicated Nuclear Station Operators in an OOS group to maintain their proficiency in OOS preparations.

[230]The actions implemented to improve the management of the plant configuration include:

- Establishment of the Work Execution Center;
- Reassignment of administrative duties from the Unit Supervisors;
- Heightened level of communication with the control room regarding work planned and in progress; and
- Establishment of a 3 year frequency for the performance of plant lineups for all systems.

These actions have shown positive results in the decline of OOS errors and the decreased number of configuration control deficiencies identified.

[231]Actions have been identified and initiated to resolve the problem with adherence to plant procedures, including the simplification of administrative requirements governing site activities, additional training targeting improvements in human performance, clearly communicating management expectations regarding procedure adherence, and the establishment of appropriate indicators to monitor performance in this area.

Corrective Action

[232]The Corrective Action plan incorporated the following salient features:

- Senior Management sponsorship of events requiring root cause investigations, with the investigation reports reviewed and approved by the PORC committee;
- Clear expectations and responsibilities for Root Cause Investigators;
- Completion dates for all Level III and above corrective actions;
- Station Manager review of overdue corrective actions, and Station Manager approval required for due date extensions;
- Effectiveness Reviews of corrective actions associated with significant conditions adverse to quality; and
- Senior Management participation in the Event Screening Meeting.

These actions restored the Braidwood Corrective Program to an acceptable level of performance. The Division-wide NOD Corrective Action Program began with the Byron program as the baseline, and was developed from that point. [233]The NOD CAP will be piloted at Byron in March and April of 1997, and Braidwood will monitor this pilot closely to maximize the lessons learned available from the effort.

[234]With respect to improving CAP effectiveness, strong Senior Management support has been provided to improve the problem classification, investigation thoroughness, and appropriateness of the corrective actions. Effectiveness reviews for these corrective actions are routinely performed. Line management ownership of the issues is ensured, and the daily screening meeting provides Senior Management the forum to review the problems reported on a daily basis. This meeting also allows the proper priority to be assigned for problem resolution. These interim measures will be maintained until the NOD corrective Action Program is implemented in May 1997.

Outage Performance

An action plan to improve the maneuvering of the shutdown plant was designed to improve shutdown performance by eliminating unnecessary activities and increasing focus on those activities requiring completion. The objective was to increase safety while controlling overall outage length. Several elements of this strategy were implemented for the Fall '96 mid-cycle outage on Unit 1, with notable schedule performance. [235]The first full scale implementation of the action plan initiative will be the March refueling outage for Unit 1. [236]The effectiveness of this strategy will be assessed after the completion of the outage.

The Planning, Scheduling and Control initiative relies on the active involvement of all elements of the work force. [237]Dedicated planners from the three maintenance disciplines, in addition to dedicated Operations planners, have been added to the Planning organization. This concentration of resources allows the schedule to be constructed to a greater level of detail than previously possible. The objective is to be able to develop a schedule which captures the work activities in sufficient detail to properly sequence the activities, allocate resources, and schedule necessary support in advance of the work

Improvements have been achieved in configuration management and controls by establishing and enforcing expectations regarding maintaining the plant in accordance with the design. [238]Operational configurational control has been improved significantly through the implementation of the Work Execution Center, which is a centralized work authorization center under the direction of a licensed supervisor. Additionally, enhancements have been made to the work authorization process to ensure that the control room staff maintains a high level of knowledge of all activities in progress with the potential to affect the units. In the area of design fidelity, [239]Braidwood has allocated significant resources to eliminate the backlog of drawing revisions, enhanced the controls over temporary modifications, conducted training on design basis compliance, and reviewed open designs and tests for potential discrepancies. [240]A design basis improvement initiative will validate the critical components of the design basis. Where deficiencies are noted, the impact will be promptly assessed, and the resolution prioritized and scheduled.

5.5.5 *Future Actions*

Braidwood Station's 1997 Operational Plan was created in a manner similar to the 1996 improvement action plans. Senior station management developed the actions and indicators necessary to ensure success in meeting the 1997 NOD performance targets for Braidwood Station. [241]The 1996 focus areas will continue to be focus areas for 1997. This information is currently being synthesized into departmental performance measures and being incorporated into all station management performance evaluations. All individual performance criteria are expected to be identified by March of this year.

5.5.6 *Monitoring Mechanisms*

[242]Performance is monitored and reported on a daily basis at the Braidwood Leadership Meeting. Each day, a different area's performance is highlighted, except for Wednesdays which are devoted to a review of the previous weeks performance in the areas of work schedule performance, readiness for upcoming weeks, and dose performance. Other topics measured throughout the month include, but are not limited to, industrial safety performance measures, outage readiness, selected reviews of backlog reduction efforts in the Maintenance, Engineering and Plant Support areas, Corrective Action Program performance in trend identification and resolution, management of radiation control activities, and Quality Verification and oversight activities.

[243]Also reported on a daily basis in the station newsletter are key human performance indicators. Among those parameters monitored are Industrial Safety indicators, LERs, personnel error LERs, consequential human errors, and dose performance.

[244]On a monthly basis, the site presents performance indicators at the Management Review Meeting conducted by the Site Vice President in conjunction with the CNOO. Key site performance measures include INPO Top Ten indicators, NRC inspection program performance, human performance as measured by event free operation, industrial safety, internal and external communications, Self Assessment activities, material condition improvement efforts, outage readiness, work planning and execution indicators, and workforce training, qualification, and productivity.

[245]Additionally, each Operational Plan/Improvement Initiative discussed in Section 5.5.4 above incorporates measurement standards by which action plan progress and objective realization are judged.

[246]Internal to the departments at Braidwood, performance attributes specific to the department are monitored to a finer level of detail. As an example, the Operating department utilizes a Scorecard Program to monitor crew performance. Each operating crew is assessed against a set of well defined and communicated expectations. In the Maintenance areas, an example of the type of performance monitoring undertaken is the tracking and analysis of rework. Rework in each department is analyzed to determine if it was caused by defective parts, skill or knowledge deficiencies or design deficiencies, among other causes. The information gained by this detailed performance monitoring is an input to the quarterly self assessments conducted by each department.

5.6 Byron

5.6.1 *Summary of Performance*

Over the past two years, Byron has experienced overall excellent performance with declines in some areas. INPO rated Byron as performance Category 1. Personnel errors have been identified in our most recent SALP as an area of concern. While overall material condition has been good, the Unit 1 Steam Generators and the Essential Service Water System are areas of concern.

One of the key material condition issues facing Byron Station is the continuing degradation of the Unit 1 steam generators. Activities are well underway to plan, schedule and perform the replacement of these generators in the Fall of 1997.

The Essential Service Water System concerns are related to silt buildup in the Cooling Tower basins and erosion of the Essential Service Water strainer elements, allowing pieces of Cooling Tower fill to enter the system. A root cause investigation was performed and a number of performance issues were identified. Improvements include changing the way non-Technical Specification related surveillances are scheduled, tracked and performed, improved review of Action Requests on a daily basis, periodic review of old Work Requests, and improvements to the design basis knowledge of the system engineers.

A Cultural Survey has been performed at Byron for the last two years. This survey is used as a leading station indicator, as it is correlated with future SALP performance. The Cultural Survey examines five key areas: Strong Organizational Mission and Goals; High Level of Knowledge and Skills; Strong Lateral Integration; Simple Work Processes/Procedures; and Strong Self-Improvement Culture. An "Engage the Workforce" team has been put in place to address how to improve the areas that affect this leading Byron indicator. Actions to improve Byron Station performance are described more fully in Sections 5.6.3 and 5.6.4 below.

5.6.2 *Management Team*

Byron has a strong management team with a track record in successful management of nuclear and fossil power plants, including ComEd plants and U.S. Navy plants. The average senior manager at Byron has over 23 years experience and the Site Vice President and his direct reports account for a total of over 230 years of experience. All of the senior managers have held SRO licenses or certificates, and 4 have completed the INPO Senior Nuclear Plant Management course.

Among the senior managers at Byron Station, the Site Vice President has more than 36 years experience at ComEd, and has held the positions of Mechanical Master Mechanic, Maintenance Engineer, and Assistant Superintendent of Administrative and Technical Services. He served as the Station Manager at Zion and then as General Manager PWR Operations and General Manager BWR Operations. The Station Manager has more than 26 years experience at ComEd, and has served successively in positions which have included Construction Engineer, Lead Scheduler in the General Office, Lead Construction Engineer at Zion, Startup Engineer at Byron, Assistant Superintendent of Maintenance at Zion, and Production Superintendent and Station Manager at Braidwood. The Operations Manager has over 21 years experience at ComEd, having held the positions of Nuclear Station Operator, Shift Supervisor (SRO-licensed), Shift Engineer, Operating Engineer, Assistant Superintendent of Work Planning, and Maintenance Superintendent. The Maintenance Manager has more than 21 years with ComEd, having served as an engineer in the Corporate Nuclear Engineering Group, Braidwood Technical Staff system engineer, Zion Special Projects Group Engineer, Technical Staff Electrical Group Leader, Shift Control Room Engineer (SRO-licensed), Master-Instrument Maintenance, Master-Electrical Maintenance,

Maintenance Staff Supervisor, and Byron Services Director. The Engineering Manager has more than 21 years experience with ComEd, and is a Registered Professional Engineer in Illinois. He has held positions in the System Electrical Engineering Department, Project Manager-Engineering and Construction-Byron, Zion Technical Superintendent and Operations Manager.

5.6.3 *Resources*

Byron Station has been provided with sufficient funding in 1997 and 1998 to sustain continued improvement. [247]Major initiatives and projects are funded to ensure that the plant can be operated, maintained and improved according to the site objectives. Staffing levels are being increased based on best performer benchmark data and future resource needs for the site. Sitewide, the permanent staffing is expected to increase by 68 people from the 1996 actual levels, to a staffing level of 892 personnel in 1997. [248]In addition, resources have been budgeted for staff augmentation on a temporary basis to support various improvement projects at the site.

[249]In addition to the replacement of the Unit 1 Steam Generators, improvements to the physical plant, upgrading of programs and backlog reduction initiatives are planned and funded through 1997. Key improvements currently funded include:

- Powerblock Work Request Task Backlog reduction
- Non-essential Service Water check valve replacement
- Essential Service Water Cooling Tower Piping upgrades
- 125 VDC Safety Related Battery Replacements
- River Screen House Blowdown De-icing Line
- Rod Drive and Inverter Cooling Systems
- Improved Technical Specification preparations (implement 7/98)
- Human Error Reduction Training
- DRPI & CRDM Connector and Cable Upgrades
- 4 Kv and 480v Breaker refurbishments
- Fuel Handling system upgrades
- UFSAR & Fire Safe Shutdown Analysis Reviews
- Solid State Protection System Maintenance Program
- Main Control Room Upgrades

Byron Station is resourced to a level that gives high confidence that sustained improvements will continue to be realized.

5.6.4 *Long Term Improvement Plans and Future Actions*

In 1997 and 1998, Byron will maintain a concentrated focus on the performance priorities of safety, production and cost. Our focus during the course of the year will be in alignment with these areas. However, nuclear safety is, and will continue to be, the top priority at Byron.

Although Byron continues to have above average performance, the scores for SALP 13, ending August 17, 1996, declined slightly from the previous SALP period. Senior station management conducted a gap analysis in mid-1996 to determine areas requiring stronger emphasis. Human Performance was identified as the major element in all SALP categories that was in need of improvement. Other areas determined to play a significant role included: identification and resolution of issues; self and independent assessment; material condition; and process improvement.

The primary elements of the improvement strategies for each area of improvement are described below:

Human Performance

[250]In 1996, several programs were implemented to improve site performance in the areas of human performance. In 1997, these programs, including those described below, will continue. Some of these programs include:

- *Human Error Reduction Training* - A formal training program was implemented in 1996 to improve skills in the areas of error prevention, detection and corrective actions. [251]This training has been expanded in 1997 to include plant personnel, security, and contractors.
- *Field Observation Reporting Program* - A system of field observation reports was initiated to formalize the process of line managers observing and reporting on worker performance in the plant. The information gathered is reviewed by line and training management and is analyzed for trends indicating performance weaknesses.
- *MARC Training* - In early 1997, Supervisory personnel received four days of training in the following areas: grievance handling, job performance counseling, administering disciplinary action, administering the collective bargaining agreement, and rules and company policy. [252]A final class has been scheduled for May/June 1997.

Corrective Action

Byron recently received a Notice of Violation for untimely corrective actions in connection with a long-standing work request associated with the SX Cooling Tower Trash Racks, and silt resolution. In spite of this event, overall, the Corrective Action Program effectiveness has been good. [253]Ongoing process improvements have been implemented for a number of years, including working with recognized experts to improve trending. [254]Effectiveness reviews for corrective actions are performed routinely. PIFs are reviewed daily by Senior Management. An NOD Corrective Action Program modeled on the Byron program was implemented in March of 1997. This program includes an improved computer program for capturing PIF data which is used by site personnel for trending.

Material Condition

[255]Several programs were implemented in 1996 and will continue to be improved in 1997 to maintain and improve the material condition of the site. These programs include:

- *The Operator Work Around (OWA) Program* - The OWA program long-term equipment or program deficiencies that provide an obstacle to safe and efficient plant operations. There are currently 64 OWAs that impact operator response to transients as defined in SOER 94-01.
- *The Material Condition Monitoring Program* - This program a visible measure of the overall material condition of systems, structures and components. [256]Systems are monitored by the System Engineer and a window color (Green, White, Yellow or Red) is assigned based on various material condition inputs. Inputs that determine the overall System Window color come from the areas of performance, physical condition, deratings, maintenance backlog, OWAs, and design deficiencies. Significant attention and station resources were allocated to address concerns raised through the Material Condition Monitoring program in the last year. [257]Work priorities in 1997 will continue to be driven by this System Windows program. Performance standards are also under development to monitor improvement.

- *Design Basis Review and Ownership* - [258]200 Design/Licensing Basis Reviews were initiated in 1996 and are continuing in 1997. Completed reviews include: UFSAR Section Reviews for Spent Fuel Pool (9.1) and Radwaste (11.2, 11.3, and 11.4); Fire Protection Report Self Assessment & Update in December, 1996; and Containment Spray/Spray Additive Design Review (UFSAR Update pending). The RH System Self Assessment is in final review. [259]Site engineering at Byron Station has transferred and maintains ownership of all architect engineer design drawings and calculations.
- *Fix It Now (FIN) Team* - The FIN Team has been in place for 21 months at Byron Station. Since inception, the team has completed over 2500 work activities which include both work requests and action requests. This high rate of productivity has not only been a key factor in the Station's success but has brought them industry recognition in the form of an INPO strength. The present goal of the FIN team is to perform 50% of the emergent work.

Self Assessments

[260]Byron Station has an active self assessment program that is directed by the Site Vice President. [261]Every department head along with selected members of the department meet with the Site Vice President and Station Manager on a semi-annual basis to discuss department performance, identifying strengths and weaknesses. During each self assessment period, four "core" topics are reviewed:

Self Initiated Departmental Topics
These topics are department-specific areas that need to be addressed. Each department monitors a number of key performance indicators. Some departments have been graphing trends, while others use the "windows" approach.

Vision and Values
Each department addresses their support of the "Vision and Values." The following items are addressed:

- Specific actions taken to achieve "World Class" performance
- Specific actions taken to promote the philosophy of a "Nuclear Generating Team"
- Specific actions taken to promote the philosophy of "Stretch"
- Specific actions taken to become more "Cost Competitive"

Training
Training will remain a topic of high visibility in every department. Each department addresses the following:

- The level of management involvement in training within the department
- Assessment of the Training Department's support of department needs

Departmental Goal Status
Each department reports on the status of their Strategic Business Plan goals.
In addition to the core issues, special emergent issues are reviewed each assessment period.

Independent Assessment

[262]Further improvement of the SQV Department's assessment capabilities will be pursued in 1997. The following basic strategies will achieve this objective:

- Perform assessments of potential performance issues utilizing the "surveillance process"
- Increase the use of Subject Matter Experts for audits
- Perform discretionary audits (program reviews) of potential performance issues
- Obtain personnel resource commitments from the Site Vice President for assessments
- Response to department requests for specific audits.

Process Improvements

[263]Byron Station will continue the implementation of improvements in the work control process during 1997. Some of these improvements include:

- *Action Request Screening* - Byron Station implemented an Action Request (AR) screening process in October of 1996. A cross disciplined group of site personnel (Engineering, Fix It Now team, Maintenance, SRO, Work Analysts, Work Control) review all action requests and work requests which have been identified since the last screening.

- *5 Week Work Control Process* - This process is scheduled to be implemented starting March 10, 1997 and completed in July, 1997. Work scope will be set based on a prepared (90%) backlog goal and material condition priorities. Work Week Managers will be utilized to control schedule changes, using tools such as the ComEd standard performance indicators, up to 4 weeks prior to execution. The process will produce individualized, credible schedules, that people can, and will, work to. With this common process in place at all 6 sites, the economy of scale can be applied to the work management process across the division.

5.6.5 *Monitoring Mechanisms*

The Byron Lead Team met and discussed the necessary focus areas and performance targets needed to ensure continued performance improvement at the site. These performance indicators and targets are reflected in the 1997 Byron Station Business plan.

[264]On a monthly basis, the site presents performance indicators at the Management Review Meetings. Key site performance measures include: INPO indicators; NRC inspection program performance; human performance as measured by event free operation; industrial safety; internal and external communications, Self Assessment activities; material condition improvement efforts; outage readiness; work planning and execution indicators; and workforce training, qualification, and productivity.

[265]An "Engage the Workforce" team has been put in place to develop and implement methods of communicating key performance indicators to all site personnel to increase overall site awareness of performance. In addition, [266]the Plan of the Day meeting is being restructured to communicate and discuss key performance measures and current issues at the site.

6.0 CONCLUSION

ComEd has extensive actions underway to improve the performance of its nuclear program. The NRC's 50.54(f) letter has caused the Board of Directors and executive management to accelerate the pace of improvement efforts and ensure that improvement is sustained throughout NOD and at each of ComEd's six sites.

The Board of Directors has become directly engaged in oversight of the performance of ComEd's nuclear program. Senior Corporate management has mobilized the financial and human resources of the entire corporation to support accelerated and sustained performance improvements, and resources are being provided to support both safe operation and sustained performance.

NOD now has in place a strong senior management team with extensive experience in turnaround situations and has secured and will continue to secure the financial resources to fund necessary improvements. The CNO and CNOO commissioned a critical self-assessment of Zion and LaSalle Station which is focusing future Zion and LaSalle improvement initiatives on the fundamental causes of past performance, and is providing lessons-learned and a similar focus for improvement initiatives at the other four sites. Major improvement initiatives are underway to upgrade engineering and technical support throughout NOD, and to assure that identified design bases and configuration control issues are addressed and resolved. The CNOO and CNO are leading efforts to engage the workforce. A new corrective action program that incorporates industry practices has been developed and will be implemented throughout NOD.

A broad range of near and long-term improvement initiatives are underway at each site and will be executed with a renewed sense of urgency. Senior management involvement and oversight from the Board of Directors, through the CNO and CNOO, and down to senior site management, will be intensified.

The Board, NOD, and the sites have adopted sets of performance criteria against which performance of each site and the NOD as a whole will be measured. These criteria ensure that our nuclear operations will be safe and that performance improvement will occur. In cases where criteria are not met, action to ensure that performance returns to acceptable levels will be taken, up to and including plant shutdown as demonstrated by our approach to LaSalle and Zion restarts.

For these reasons, ComEd concludes that it can safely operate six nuclear stations while sustaining performance improvement at each site.

APPENDIX 1

Fundamental Causes and Corrective Actions

Appendix 1 correlates the causes of cyclic performance to the major corrective actions taken by ComEd at the Corporate, NOD and site levels. Each of these actions is described in detail in the body of ComEd's response.

APPENDIX 1

Fundamental Causes and Corrective Actions

Causes	Corporate Action(s)	NOD Actions	Site Actions (see Sections 5.1-5.6)
<u>Oversight</u> We need to strengthen management oversight of nuclear operations. <u>NRC 1/27 Letter Causes</u> Weak corporate oversight of nuclear operations.	[267]The Board revitalized its NOC by adding members with extensive nuclear management experience, including experience managing multiple reactor organizations. [268]The Board specifically chartered the NOC to provide aggressive oversight of ComEd's nuclear program performance and to keep the Board apprised of safety and performance issues. [269]The NOC conducts site visits to determine whether nuclear program management actions are appropriate and effective. [270]The NOC of the Board will monitor a set of NOD indicators and report to the Board at Board meetings.	[271]The CNOO (typically monthly) conducts Management Review Meetings at each site, focusing on safety performance and the effectiveness of improvement initiatives. [272]The Corporate assessment and audit function will be strengthened by applying the requisite resources and by establishing a living schedule for corporate audits and assessments to be performed at each site and NOD. [273]To ensure that multi-site trends and lessons learned at particular sites are recognized and acted upon, audits will be analyzed by the NOD Nuclear Oversight group as well as the individual sites.	[274]Each site will submit standardized performance information for senior manageme review. The periodic review process is utilize to demonstrate leadership and transmit expectations for performance. Senior site management participated in the development of operational improvement plan which form the foundation of our improvemen effort. These plans provide an opportunity to demonstrate the commitment to safety and excellence to the site work force.

APPENDIX 1

Fundamental Causes and Corrective Actions

ComEd/NRC Causes	Corporate Action(s)	NOD Actions	Site Actions (see Sections 5.1-5.6)
Management Attention and Resources We have not consistently applied necessary resources and management attention to the sites to ensure the successful completion of our improvement plans. NRC 1/27 Letter Causes Lack of effective management attention and application of resources.	[275]The Board and senior management are focusing on remedying not only the problems at individual sites, but on improving the nuclear program as a whole through the commitment of the full financial and management resources of the corporation to the nuclear program. [276]The Board substantially increased resources for the nuclear program. [277]The NOC of the Board will provide to the Board timely and independent information concerning the nuclear program, and ensure line management is held accountable for meeting Board performance expectations. [278]Support of the nuclear site's Electronic Work Control System (EWCS) which is used to plan and control work at the nuclear stations, has been made the highest priority of the ComEd Information Systems organization. [279]Senior managers outside of NOD have become engaged in stronger efforts to support the nuclear program, resulting in improvements in computer hardware, human resources and compensation, parts control and availability, financial controls, and security.	[280]The new NOD senior management team is establishing Division-wide performance measures and criteria to provide stronger oversight. [281]NOD and site budgets have been developed based upon the performance issues facing each site and then aggregated to form the NOD budget. In the past, site budgets were established by dividing a pre-defined nuclear program budget.	Each site's management team has been strengthened by the addition of experienced nuclear professionals in key positions. [282]A standardized business planning process h: been established to improve long range planni and accomplish and sustain performance improvements. Improvement actions are fund in station budgets.

APPENDIX 1

Fundamental Causes and Corrective Actions

Causes	Corporate Action(s)	NOD Actions	Site Actions (see Sections 5.1-5.6)
<u>Standards</u> We have not consistently enforced high standards for nuclear performance, particularly in the areas of operations, engineering and corrective action. <u>NRC 1/27 Letter Causes</u> Poor problem recognition and failure to ensure lasting corrective actions. Lack of adequate engineering support. <u>Dresden Causes - ISI</u> Full scope of corrective actions not yet complete or effective. Ineffective oversight of engineering contractors, weaknesses in maintenance of design basis.	[283]The Nuclear Operation Committee to the Board has been tasked with oversight of nuclear program activities which includes monitoring performance of operations, engineering and corrective action functions. Standardized performance indicators are being developed and will be presented at NOC of the Board meetings.	A set of special reviews is being performed to ensure that operational problems indicated by the LaSalle and Zion events are not present at other sites. From 1994 to 1996, ComEd hired over 100 additional engineers to support the nuclear program. [284]Design records were transferred from contract design engineering organizations to ComEd. [285]A design basis and UFSAR validation effort has been initiated throughout NOD. [286]Following the NRC ISI at Dresden and the Engineering and Technical Support Inspection at Zion, broad initiatives (e.g., the Engineering Assurance Group) were initiated to ensure that each site has sufficient engineering support and that we can have confidence in plant design bases. [287]A standardized corporate corrective action program, based on a review of industry programs, is being implemented throughout NOD. The program includes specific performance measures to gauge program effectiveness. A corporate corrective actions group is being established to ensure the appropriate response to site and industry events. [288]Root cause and trend analysis specialists are being trained for each site and for corporate NOD offices. [289]Specific objectives were defined for 1996-97 to improve engineering support, including milestones for measuring progress. Many of these objectives were described in detail in our January 31, 1997 letter on design basis conformance.	[290]Each station and NOD are reviewing the IS causes, the Dresden NRC Independent Safety Inspection results, and the causes identified i the NRC 50.54(f) letter to ensure causes and lessons learned are addressed at all ComEd stations. [291]The site self-assessment and oversight capability is being strengthened by realigning the site assessment and performance monitori organizations to report to the Site Quality Verification manager at each station. [292]Procedures have been revised to provide m concise direction for site personnel regarding initiation criteria for problem reporting. [293]Specific steps have been taken to ensure problem reporting by engineering personnel. [294]An audit program of engineering contracto organizations has been established to determi design control and calculation quality. [295]Extensive training, site meetings and form communication devices have been used to communicate management expectations to sit employees.

APPENDIX 1

Fundamental Causes and Corrective Actions

Causes	Corporate Action(s)	NOD Actions	Site Actions (see Sections 5.1-5.6)
<u>Lessons Learned</u> We have not consistently communicated or internalized the experience of our own nuclear facilities or those of others in the industry. <u>NRC 1/27 Letter Causes</u> Inability or reluctance to learn from experiences at ComEd and other utilities.	[296]The Board's NOC is independently and objectively evaluating line management decisions, and keeping the Board informed of problems and the actions necessary for continued improvement.	A new NOD management team has been formed over the last two years. From 1994 to 1996, new Vice Presidents of Engineering, Nuclear Support and Generation Support were selected for their proven ability to manage successful nuclear programs. [297]The NOD was reorganized in 1996. A new CNO and CNOO with substantial experience in both plant turnaround situations and sustaining strong performance were appointed. [298]To strengthen first-line supervisor development, ComEd management has upgraded management development, selection and succession planning processes; conducted first-line supervisor skills and leadership training; and expanded master craftsman skills training. [299]Joint Leadership Team meetings composed of senior ComEd and bargaining unit representatives are conducted every two weeks to improve management and bargaining unit relations and communications. [300]The Peer Group Program has been established to develop standard practices and processes to be adopted throughout NOD. [301]A NOD-wide formal program for evaluating, sharing, and assessing the effectiveness of responses to lessons learned at both ComEd and other nuclear stations is being implemented to assure lessons learned are being shared and responded to throughout NOD.	Site management teams have been strengthened by retaining experienced managers with demonstrated success in improving nuclear plant performance. Vice Presidents now have significant experience successful nuclear stations. Four of six stations have new plant managers. [302]A standardized business planning process has been established to accomplish key improvements. In addition, these plans provide a means to measure progress and determine whether improved performance is being achieved. [303]Root cause specialists are being trained w will be responsible for error trending and performance for quality self-assessments. [304]Standardized performance measures are being implemented to gauge processes and effectiveness of corrective actions.

APPENDIX 1

Fundamental Causes and Corrective Actions

ATTACHMENT

ComEd Response to NRC 50.54(f) Request

LISTING OF IMPROVEMENT ACTIONS NOTED IN ATTACHMENT

Level I	FUTURE ACTIONS - Those actions for which a future action, with or without completion dates or milestones is cited. Also includes those actions to be taken under certain defined conditions.
Level II	ONGOING ACTIONS - Those actions which are ongoing and are not designated to cease, will continue until completion, or which have a future completion date.
Level III	COMPLETED ACTIONS - Those issues for which action has been completed but should not be undone without an evaluation.

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1 To reinforce these principles and ensure that performance results are achieved, the CNOO conducts Management Review Meetings (typically each month) at each site.

2 In a special action, the Board approved a formal Charter for the Committee which clearly establishes the Committee's independence, directs the Committee to provide oversight of ComEd nuclear program performance; and requires the Committee to keep the Board apprised of safety, performance, and resource allocation issues, as well as its views on whether nuclear program management actions are appropriate and effective.

3 The Committee will continue to ensure that the Board receives timely and independent information concerning the nuclear program, and that the line management is held accountable for meeting Board expectations.

4 ComEd will continue to ensure that the NOD and each site have the resources to sustain performance improvement.

5 Additional corrective actions to assure that the ISAT fundamental causes are addressed have been incorporated in the 1997 LaSalle County Unit 1/Unit 2 Restart Plan and the 1997 Zion Operational Plan.

6 The remaining four ComEd sites are reviewing their Plans against the ISA fundamental causes to assure that those causes will be addressed and resolved.

7 Long term sustainable improvement will be the focus in future ComEd Operational Plans.

8 The CNOO has relayed his expectations to the sites on the resolution of ISA issues and will be performing periodic assessments of the progress toward resolution.

9 Parts analysts and procurement specialists are being added to the sites to improve parts specification, control and the timeliness of procurement activities.

10 The Human Resources department has made several changes to improve support of the nuclear program. These include authorization for payment of overtime to several additional grades of personnel, and streamlining of hiring personnel into the nuclear program.

11 proposals are being developed for improving work rules that affect quality and timeliness of work completion at the nuclear plant sites.

12 Corporate nuclear security functions will be transferred to report to the NOD.

13 We will continue to engage the entire Corporation to help sustain improvement in the nuclear program.

14 Over 100 people were added in ComEd nuclear program engineering organizations.

LISTING OF IMPROVEMENT ACTIONS NOTED IN ATTACHMENT

15 Design records were transferred from contract design engineering organizations to ComEd, and on-site design engineering capabilities were created along with a clearer NOD Corporate engineering role. During this time, progress was made in the development and issuance of a series of common nuclear engineering processes at the six ComEd nuclear sites.

16 These actions included, in part, establishment of an engineering assurance function at each site and the NOD central offices to further ensure the quality of design and technical work, commencement of safety system functional inspections, review of Technical Specification interpretations, and a review of the top ten risk significant systems for items that may impact system readiness.

17 ComEd has embarked on a significant project to develop and validate essential design and licensing basis information and reconstitute essential calculations.

18 Over the next three to five years, ComEd will expand the scope and coverage of the design basis document (DBD) program.

19 For Byron and Braidwood, specific tools ("topical roadmaps") will be developed to assist engineers in obtaining needed design basis information. Training will be provided to engineers and the plant staff.

20 A nuclear engineering procedure for this effort is being prepared and will address the review and reconstitution of selected key design basis parameters/calculations.

21 Those calculations determined to be significant will then be revised or reconstituted as appropriate.

22 Thus, a verification and validation of the regulatory design basis information contained in the UFSAR will be performed at each site. This will include a review of the UFSAR, Technical Specifications, other applicable design documents, and plant procedures.

23 The expected roles and responsibilities within the engineering organization will be clarified and reinforced through frequent communication and mentoring.

24 Additional training will be conducted to address identified areas for improvement such as design basis adherence, configuration management implementation, operability determinations, and safety evaluation preparation.

25 Engineering Assurance groups have been formed to perform technical oversight of important engineering products such as safety evaluations, operability reviews, design changes

26 Corporate and site engineering personnel are participating with the quality verification organizations in the conduct of technical audits of vendors

27 Engineering has initiated actions to streamline and improve engineering work processes and management controls associated with the implementation of engineering programs and development of engineering products such as plant modifications and temporary alterations.

28 Engineering standards and specifications are being reviewed, revised and developed as determined necessary.

29 Project controls are being developed for all site engineering groups. Common safety, cost and production performance indicators have been developed and goals are being established.

30 Periodic expectation and accountability meetings will be conducted with senior NOD management.

31 The engineering backlogs are being defined, characterized and a plan established to reduce backlogs.

32 System engineers are becoming system managers. System managers will be responsible for assuring system readiness and determining the work needed for their systems. Common system trending will be developed and implemented.

LISTING OF IMPROVEMENT ACTIONS NOTED IN ATTACHMENT

33 A Corporate component engineering program will be defined and NOD-level component technical experts added to the NOD staff to provide common direction and assistance to the six sites as needed.

34 NOD has completed, and NOD senior management has approved, competency models for management.

35 The NOD Leadership Planning and Development (succession planning) Process has adopted a competency-based process to develop succession plans for NOD senior management positions.

36 In regard to first-line supervisor (FLS) development, NOD has implemented new processes to ensure the readiness of new FLS candidates and upgrade the skills of FLS incumbents. The new tools and processes put in place include: Assessment Centers (for selection and development); Pre-supervisory Training; FLS Incumbent Training; FLS 360-Degree Development Feedback; and FLS Development Planning

37 Additionally, second-line supervisors are attending two days of training to learn how to better coach and develop the supervisors reporting to them.

38 This training has also led to establishment of local and business unit protocol groups which provide the opportunity for more consistent resolution of issues across sites.

39 Zion Station has participated in the initial Engage the Workforce development, however, due to the current performance situation, will defer additional activities until a later time.

40 The Engaging the Workforce deployment plan for 1997 includes: delivery of an Engaging the Workforce Deployment Plan; training and developing Lead Teams at Braidwood and Dresden; training and development of facilitators and Improvement Team Leaders; and conducting Policy Deployment at Braidwood, Byron, Dresden, and Quad Cities.

41 management and the bargaining unit are negotiating supplemental collective bargaining agreements that will enable work practice improvements.

42 Standardized 10 CFR 50.59 and operability training has been developed and provided to Plant Operating Review Committee (PORC) or Safety Review Committee (SRC) members at five our six sites. A similar orientation has been provided to NOD Senior Management.

43 Criteria for direct hire selection and training of journey level maintenance craftsmen and technicians are being redefined. Elevated standards are being established for completion of initial training.

44 A standard job assignment matrix is being developed for basic and some intermediate maintenance tasks. This standard matrix will help ensure that workers are fully qualified to perform assigned work tasks.

45 Common Corporate Administrative Procedures governing the analysis, design, development, implementation and evaluation of training will be implemented in 1997.

46 Position descriptions have been defined for degreed, non-licensed Shift Technical Advisors (STAs). Training is currently being developed to support the enhanced on-shift engineering role of the new STA.

47 Operator skills and knowledge at Zion and LaSalle are being upgraded through focused training on identified topics. Lessons learned at LaSalle and Zion are being provided to the other four sites for coverage during training.

48 A standard screening process has been put in place at all six sites to ensure maintenance work is properly classified and prioritized.

49 Work planning is being evaluated to identify inefficiencies in the planning process that prevent work from being performed.

50 All sites are currently implementing a minimal work request process which enhances job planning for minor work.

LISTING OF IMPROVEMENT ACTIONS NOTED IN ATTACHMENT

51 A revised scheduling process has been designed and is currently being implemented at Braidwood. The other sites will implement this revised scheduling process by the end of 1997.

52 The amount of emergent work completed by the Fix-It-Now teams is measured to determine the effectiveness of the initiatives.

53 Performance measures are being developed to monitor and improve process performance in various areas. These measures are being standardized to permit comparison of performance between sites.

54 Our CNOO, during his periodic visits (typically monthly) to the sites, conducts open discussions with groups of 15-20 employees regarding our plans, issues of concern, and steps that can be taken to improve.

55 In order to ensure that corrective actions and responses to lessons learned are consistently and vigorously implemented throughout the NOD, a new corrective action program has been developed by representatives from all six nuclear sites and the NOD central office.

56 The new process includes several improvements over the current program. It clearly delineates and standardizes the threshold for problem identification through Problem Identification Form (PIF) initiation, and establishes common PIF screening criteria that provide greater ability to analyze PIF data.

57 The new corrective action process will include human error reduction methodology, including standardized coding, problem identification, trend analysis, and root cause analysis techniques.

58 ComEd is training dedicated root cause analysts in root cause analysis techniques.

59 Groups of these trained individuals will be stationed at each of the nuclear plant sites and in the NOD central office.

60 Personnel will also be trained on the new corrective action process and on human error reduction techniques.

61 The remaining sites have developed plans to implement this process during 1997.

62 the Station Managers have been designated as the accountable group to implement Corrective Action Program improvements, monitor corrective action performance and take appropriate follow on actions.

63 The information will be taken monthly and used to evaluate the effectiveness of corrective action process improvements as well as participation by each site in the process.

64 Performance indicators have also been developed to monitor the timeliness of implementation, quality of the corrective actions, and the number of significant events which are repeated. These indicators are being tested at Byron. Site and NOD central management will take appropriate actions based upon performance and results.

65 A NOD-wide common cause assessment to identify prevalent causes of problems identified in the NOD will be completed by the end of June, 1997.

66 Common cause analyses will initially be conducted on a quarterly basis.

67 A training matrix for root cause investigators has been developed and necessary courses are underway to support implementation as required by the corrective action procedures.

68 Groups of representatives from each site and a full time support peer are assembled into Peer Groups to develop and implement safe, effective, simple, efficient and uniform processes and practices at each site. Peer Groups have been established to improve processes in the areas of Operations, Work Control, Outage Management, Configuration Control, Equipment Reliability, Training, and Management and Administration.

69 Other peer groups and performance initiatives in the near term include: Operations Standards and Human Performance, Five-Week Work Scheduling Process, Periodic Maintenance and Surveillances

LISTING OF IMPROVEMENT ACTIONS NOTED IN ATTACHMENT

70 include the utilization of electronic bulletin boards for Nuclear Operations Notifications (NON). ComEd's NOD utilizes such bulletin boards for the posting of ComEd Inspection Reports and other generic communication of mutual interest for each of the sites.

71 In February 1997, a procedure was issued for evaluating and initiating NOD-wide action in response to operating experience at any of the ComEd nuclear stations. The procedure also covers response to operating experience items from non-ComEd stations. The procedure provides for review and screening of operating experience items, development of responsive action, and review and evaluation of effectiveness of responsive action.

72 ComEd is strengthening its oversight of nuclear operations at all levels and instituting common indicators by which safety performance can be effectively monitored.

73 Oversight at the Corporate and site levels are in the process of being revitalized to augment line management's continuous oversight of nuclear safety and conformance to ComEd's policies and performance goals. In addition, oversight will provide integrated tools for measuring safety performance, allowing site-to-site and industry performance comparisons, and providing earlier identification of emerging safety issues. Performance measures and a program for assessment of performance in the functional areas of operations, engineering, maintenance, and corrective action are being developed.

74 The Nuclear Oversight Manager reports directly to the CNO and is responsible for keeping the CNO apprised on a timely basis of the performance of quality programs, adequacy of NOD central and site functions, and significant quality and safety issues.

75 The CNOO conducts Management Review Meetings at each site focused on safety performance and the effectiveness of improvement initiatives. These meetings address trends of safety, performance, and cost indicators; results of third party (NRC and INPO) inspections; results of site self-assessments; status of material condition in the plant; outage planning and performance; and assessments of the quality of workforce product and training.

76 In order to revitalize NOD-wide oversight, the staff size is being increased and the assessment and audit programs are being formalized and expanded. The NOD audit and surveillance program is being developed to integrate with the site oversight and quality programs. This program will be in place by September, 1997.

77 In addition, a new quality oversight group at the Central Materials Inspection and Storage (C-Team) facility is being established.

78 NOD Nuclear Oversight staffing levels will support data analysis, performance monitoring, management and coordination of industry (peer) assessments, and assessments of emerging issues or special evolutions.

79 An integration of data and analyses from the station and corporate oversight organization will be performed to provide insight in regard to station and division performance. The first pilot report focusing on safety was issued in March 1997.

80 The procedure defining this program will be completed in June, 1997.

81 A formalized living schedule of audits and assessments is being developed at the NOD level to assist in the allocation of resources and coordination of audit and assessment activities.

82 NOD Nuclear Oversight and Site Quality Verification (SQV) are establishing an NOD-wide standard analysis and reporting process. This process will be similar in structure to the NRC's Integrated Performance Assessment Process (IPAP).

83 Emergent trends or issues will be reported to the SVPs, CNOO, and CNO on a monthly basis.

84 Quarterly, a more in depth analysis focused on NOD-wide issues will be performed and the results will be reported to the CNO and CNOO

85 peer assessments will be performed to evaluate specific organizations, programs, or processes. Examples include the recent ISAs at Zion and LaSalle. Significant deviations from best industry practices will be identified and shared with relevant organizations.

86 Assessments will be performed on emerging issues identified by other evaluation processes or performance indicators. Other assessments will be focused on the site quality organizations and their programs, processes and products. Assessment criteria will focus on specific performance areas, allow a comparison of performance to pre-established safety and quality standards, and assess the effectiveness of organizational performance of roles and responsibilities.

87 Safety oversight at the sites by the SQV and Quality Control (QC) organizations includes the QC inspection and Quality Assurance (QA) audit activities prescribed by 10 CFR 50 Appendix B, Independent Safety Engineering Group (ISEG) functions of surveillance and safety review, and evaluation of site problem identification and corrective action programs. Also providing safety oversight at the site level are the PORC (or SRC) and the Safety Review Board (SRB) to be implemented at all sites.

88 Each site also has a group that evaluates the severity of events, and determines whether a root cause analysis is warranted. Processes are being implemented for evaluation of the effectiveness of corrective action.

89 Monitoring of performance against the indicators, Corrective Action Requests (CARs), and industry experience, and review of site self-assessments will also be conducted within SQV.

90 The Safety or Management Review Boards consist of senior experienced outside experts and ComEd personnel who review site performance and meet with site management to discuss performance and provide comments and recommendations.

91 The SRBs evaluate station safety performance, corrective actions, and improvement plans. The SRB Chairmen will also provide input to the NOC of the Board. The site gains outside perspective and critical review of performance from this body.

92 The PORC or SRC at each site is chartered to review safety related activities in order to assist management in assuring safe operation. The Committee is composed of senior site personnel from several disciplines and provides across-the-site review of safety issues.

93 ComEd has established an integrated structure of performance measures, criteria, and actions to be taken if the performance criteria are not met.

94 The indicators described below will be compiled monthly by each site's SQV organization, and assembled on an NOD-wide basis by Nuclear Oversight.

95 we are also taking special measures to assess and monitor our performance to ensure that areas of weakness indicated by the LaSalle and Zion operational events are not present or are addressed at all of our nuclear stations.

96 We have established expected performance criteria for each indicator. In any case where a criterion is not met, we will take the action described in Section 4.7.3. 1. Automatic Scrams While Critical (NRC), Performance criterion: Take action if there is more than one scram per unit per year. 2. Safety System Actuations (NRC), Performance criterion: Take action if there is more than one safety system actuation per unit per year. 3. Collective Radiation Exposure (NRC/WANO), Performance criterion: Take action if projected or actual results exceed site annual year end exposure goals. 4. Unit Capability Factor (WANO), Performance criterion: Take action if projected or actual performance falls below year-end site goal. This criterion will apply to Zion and LaSalle following restart of their units. 5. Unplanned Capability Loss Factor (WANO), Performance criterion: Take action if projected or actual results show capability loss > 5% above established year-end site target. This goal will apply to Zion and LaSalle following restart of their units. 6k. Safety System Performance (WANO), Performance criterion: Take

action if unavailabilaity exceeds two times the INPO goal for any system. 7. Industrial Safety Accident Rate (WANO), Performance criterion: Take action if industrial safety accident rate exceeds established site target. These indicators will be measured at each site and for the NOD as a whole. They will be monitored by our CNOO, our CNO, and the NOC of the Board of Directors. The NOC is responsible for communicating any significant performance trends to the full Board. In addition, as described in Section 4.7.3, we will take action in the event that these indicators deviate from expected performance criteria.

97 ComEd is establishing a comprehensive set of NOD-wide performance indicators to provide more specific measurement of NOD and all sites' progress in achieving results. Along with the top-level indicators, these NOD-wide indicators will be used consistently at all sites and reviewed monthly during the CNOO's Management Review Meeting at each site. These measures will permit comparison of performance and identification of trends between sites and for the entire NOD. These indicators will also be reviewed by the NOC of the Board. Operations - Operator Workarounds, Out of Service Errors, Human Performance Error Licensee Event Reports (LERs), Temporary Alterations, Failed Technical Specification Pump and Valve Surveillances, Unplanned Entries into LCOs, Percent Contaminated Floor Space. Maintenance - Non-outage Corrective Work Requests, Percent Rework, Outage Power Block Work Requests. Engineering - Engineering Requests, Engineering Requests Overdue. Corrective Action - Corrective Action Items, Overdue Corrective Action, Repeat Events, Number of PIFs Written. Other - Overtime Hours, Cited NRC Violations. We are in the process of establishing consistent definitions and performance criteria for these measures. As with the top-level indicators, in the event that the expected performance criteria are not met, we will take action as described in Section 4.7.3.

98 The definitions of these indicators, and the performance criteria associated with them, will be fully established by April 15, 1997, and will be available for discussion at the briefing of the Commission on April 25, 1997.

99 we will monitor several qualitative indicators, such as employee concerns, allegations, and the results of a periodic safety culture survey

100 we have established the actions to be taken if the performance criteria are not met. In order to assure that effective and timely actions are taken, assessment of performance indicators and implementation of actions based on this assessment will take place at the site, NOD, and Board levels. Each of the performance indicators described in Sections 4.7.1 and 4.7.2 above will be monitored by the Site Vice Presidents, and will be reviewed during the periodic Management Review Meeting for each station.

101 Beginning in May and continuing monthly thereafter, each Site Vice President shall submit a letter to the CNOO reporting the status of each of his station's performance indicators for the previous month. Action in cases where a performance criterion is not met will be as follows: If a performance criterion is not met, a "variance report" describing the cause of the deviation will be presented as part of the next MRM. If a performance criterion is not achieved for two consecutive months, the Site Vice President's monthly report to the CNOO will include a written action plan to bring performance back into conformity with the criterion. Such a decision will be reported to the CNO. If: (1) a performance criterion has not been met for three months; or (2) responsive action has achieved insufficient progress over a sustained period, the CNOO will report this to the CNO. The CNO and CNOO shall establish a team, reporting to the CNOO

102 The peer group that has been formed to develop improved NOD-wide Operations programs, processes and standards (see Section 4.4 above) has developed a set of indicators for measurement of the safety and quality of control room performance. Significant trends in these indicators will be reported at the Management Review Meeting conducted by the CNOO.

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103 To immediately determine whether the types of operational problems identified in the Zion and LaSalle ISA exist at other stations, the CNO has directed that the NOD Vice President of Nuclear Support (who headed the investigation of the recent Zion event) visit each of our sites to observe control room activities and review control room activities.

104 Teams of peers from the Byron, Dresden, Quad Cities and Braidwood station will perform operations peer assessments to evaluate safety culture, conservatism of operational decision-making, and implementation of operations standards. Standard review plans and checklists will be used during these assessments. Reports of the results of these evaluations will be provided to the CNO, the CNOO, and the station's Site Vice President.

105 In order to ensure sustained improvement at Dresden Station, the new management established a formalized business planning process which led to the development of the 1997 Operational Plan.

106 For 1997, the site has established a $175 million dollar operating and maintenance budget. Material condition improvements, Vendor-supplied Equipment Technical Information Program (VETIP) backlog reduction, Performance Centered Maintenance (PCM) program development, Work control/outage activities, Large motor repairs, Housekeeping, 24 month fuel cycle, Design engineering activities, Engineering program initiatives.

107 we have completed the process of developing a comprehensive set of actions to address the deficiencies identified by the ISI. Dresden's letter to the NRC dated February 26, 1997 provides our detailed response to the identified deficiencies.

108 Several steps have been taken to improve the identification and correction of problems, and several more are planned. In April, 1997, Dresden will implement Phase I of the new ComEd standard corrective action process.

109 Phase II of the standard corrective action process will be implemented in the fall of 1997 and will include the use of the final corrective action database and associated training for site personnel.

110 Dresden Administrative Procedure (DAP) 02-27, *The Integrated Reporting Process (IRP)*, has been revised to provide more concise direction for site personnel regarding Performance Improvement Form (PIF) initiation criteria. This revision also incorporated Maintenance Preventable Failures (MPF) as a criterion for PIF initiation.

111 Site personnel are being trained to ensure understanding of the revised initiation criteria.

112 Nuclear Engineering Procedure (NEP) 10-3, "Disposition of Design Basis Discrepancies," was issued on January 20, 1997, to clearly delineate management expectations for PIF generation by Engineering personnel when design discrepancies are identified.

113 We will continue to monitor PIF initiation levels to ensure that problem identification and reporting continue.

114 with significant Radiation Protection experience was assigned to the position. This individual is responsible for error trending and performance of quality self assessments, and will be included in the review cycle of corrective action approval. This individual also ensures that actions taken for NTS item closure are complete and meet the intent of the commitment. This individual will remain on staff until RP Department performance is satisfactory in the area of root cause and corrective actions.

115 On November 12, 1996, ComEd submitted its action plan for ensuring appropriate design control.

116 Dresden assembled a dedicated team of senior experienced engineering personnel to identify and review key operating parameters against system calculations for the 12 most risk significant systems. This action was taken as part of a commitment made to the NRC on November 8, 1996 regarding actions to ensure current status of key safety systems.

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117 A program of audits of the Nuclear Steam Supply System supplier and selected Architect/Engineers (A/Es) has been established to determine the quality of design control and calculations. An audit of the principal A/E has been completed which identified instances of technical errors and administrative and review process weaknesses.

118 Several additional audits are scheduled during 1997.

119 To reduce work start delays, the Operations Department in September, 1996, was reorganized to provide better focus on accomplishing Out-of-Services to support scheduled work activities. Additional changes to improve operations performance and coordination in support of scheduled work are continuing. In addition, in January 1997, the Operations Department implemented a process for pre-approval of start of work for specific work packages, which works to minimize delays while waiting for work-start approval at the Work Execution Center.

120 A new set of these tools has been designed and implemented to provide daily information to work control and maintenance management to highlight performance strengths and weaknesses. Benefits expected include improved work management decisions, better resource allocation and utilization, and an increase in the rate of work completion.

121 Operations has established a fixed period of time in normal cycle training to discuss and reinforce management expectations. Operations Shift Managers utilize routine crew briefs to reinforce management standards and personal accountabilities associated with those standards. Routine orders are generated by senior operations managers

122 new maintenance supervisors have been provided training on Station and Maintenance Standards and Expectations. This has specifically included expectations in the RP area. Maintenance and Station Standards and Expectations are reinforced through weekly staff meetings, management and supervision, pre-job briefings and scheduled weekly shop meetings.

123 Engineering has conducted accountability meetings to review the status of system improvement plans, projects and programs.

124 since October 1996, a "Greeter" has been established at the entrance to the RPA.

125 Dresden is implementing and tracking these actions through our Nuclear Tracking System and/or the Dresden 1997 Business Plan, and are reviewing progress in the monthly performance assessment meetings.

126 the 1997 Dresden Operational Plan provides the foundation for improvement actions at the site. It sets forth initiatives to improve station performance, and targets human performance and error reduction, material condition, and outage execution as specific areas for improvement. The Operational Plan includes specific performance goals to ensure accountability toward performance improvement and effective execution of the plan.

127 we have implemented or have underway actions to address the root causes identified by the ISI. These actions include a substantial upgrade, on a Corporate basis, to our corrective action program, as well as site-specific training to ensure that problems are identified, properly analyzed, and effectively resolved.

128 For 1998, we intend to use the Operational Plan approach to continue addressing performance problems and sustain performance improvement.

129 On a monthly basis, the site distributes a management performance report that clearly summarizes performance for the previous month in a clear and concise format. The Dresden Operational Plan also contains performance targets by which progress in achieving performance improvement is measured.

130 the senior managers meet with the CNOO once per month to review performance results and plan corrective action for the site.

LISTING OF IMPROVEMENT ACTIONS NOTED IN ATTACHMENT

131 Site departments also have their own internal performance measures, for example an internal event free performance clock, assessment results, rework, errors per operating crew, and personnel exposure.

132 To ensure all site personnel are aware of performance issues, a site newsletter is distributed three times per week. Several performance measures are reported in each issue

133 Additionally, the Site Vice President conducts an all-station meeting every month to discuss performance results success in resolving performance problems, and other issues of importance.

134 The station has been provided with sufficient resources to continue its planned improvements in 1997. Quad Cities has a 145 Million dollar Operating and Maintenance Budget for 1997. This represents a 20% increase over 1996. 28.5 Million dollars is associated with improvement programs. UFSAR Compliance Review, Instrumentation and Control Calculations, Electrical Cable Program, Reactor Recirculation System Valve Packing Design Change, Fuse List, Master Equipment List, Drawing Update, Engineering and Maintenance Backlog Reduction, Control rod Drive Hydraulic Control Unit Rebuilds, Design Bases Reconstitution and Validation, Validation of Design Basis Documents, Development of New System Design Basis Documents, Development of New Topical Design Basis Documents and Safety System Functional Inspections.

135 The station's budget for capital improvements in 1997 is 25 Million dollars. Planned improvements include: Reactor Recirculating Pump and Motor Refurbishments, Torus Suction Strainers, Electrical Cable Replacements, Core Instability Monitoring System, Control Room Upgrades and Zinc Injection.

136 the station is completing the three year COA, a similar ongoing process will be used to chart the course for improvement initiatives in virtually all aspects of its business.

137 Annual operational plans will continue to be used to manage future improvements.

138 Mechanisms were put in place to communicate expectations and standards, provide feedback on performance and receive feedback from the organization. Meetings between the Site Vice President and each cognizant manager are held to review the manager's performance during the previous month.

139 The Site Vice President typically conducts a monthly meeting with all site personnel.

140 The Site Vice President and Station Manager conduct a monthly meeting with all Department Heads and First Line Supervisors.

141 Improvement plans are underway to improve the Station's material condition, technical support and corrective action program implementation.

142 Improvement initiatives include: scheduling of work requests in the station backlog; aligning of system surveillances and Preventive Maintenance (PM) work into their respective work week window; backlog reduction; achieving goals in key material condition indicators; improving execution of maintenance work processes; and reduction of equipment related Operator Compensatory measures.

143 establishment of a Plant Response Team; improved training for engineers on the station licensing basis and root cause analysis; and reduction of the station design drawing backlog and open design changes.

144 The quality of Root Cause Analysis (RCA) will be improved by the development of additional system historical packages and by further training of specific personnel in RCA techniques.

145 This training is scheduled throughout 1997. An effectiveness review of the training program will be conducted to determine future training requirements and any required changes to the program. Systems selected for historical package development include Recirculation, 125 VDC, and Instrument Air.

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146 A substantial effort to prioritize and schedule engineering resources is in progress so that the proper focus can be placed on the corrective action issues. The Plant Response Team will deal with day-to-day emergent issues.

147 The initiatives include the adoption of common NOD procedures or instructions on the identification, root cause determination, tracking and trending, resolution, and measurement of effectiveness of corrective actions. These procedures and instructions have been reviewed, approved, and implemented at Byron and are currently being adopted by each of the respective station management teams.

148 and the close-out letter will be submitted in April of 1997.

149 In addition to the IQE discussed above, the station prepares a monthly status report including information from all key functional areas.

150 Also on a monthly basis, the Vice President and CNOO meet with station management and reviews station performance and progress.

151 LaSalle management has decided not to restart either unit until the material condition, operator performance and engineering support issues are resolved.

152 In engineering, functional performance reviews of systems important to safe and reliable operation are being performed to ensure that any deficiencies are identified and corrected prior to startup. These reviews include a functional performance comparison to the design basis. Risk significance is a key element in system selection. This effort will also include selected functional testing of the systems to confirm performance capabilities. We are also performing reviews to identify modifications that may have been performed outside the design change process.

153 In operations, training materials and methods are being reviewed and improved in order to provide high quality, additional training for operating personnel. In addition, to improve operator performance, we are clarifying training objectives, evaluating the effectiveness of our training instructors, and upgrading our simulator scenarios.

154 Many of these actions are incorporated in the LaSalle County Station (LCS) Unit 1/Unit 2 Restart Plan.

155 Resources have been dedicated to the identification and prioritization of material condition and design basis deficiencies. This effort has resulted in the refurbishment of several major pieces of equipment and the resolution of other critical deficiencies.

156 LaSalle O&M funding for 1997 has been identified based on the Restart Plan to support major improvement initiatives as well as daily operation to ensure that the plant can be properly operated, maintained and improved . The current O&M budget of $160 million is under review to assess the impact of ISA issues and restart-related work. Currently planned improvements include: 24 month refuel, Design basis document improvement, IDATA, System functional reviews, Setpoint improvements, UFSAR upgrade, 480 volt switchgear, Improve technical specifications, Getting work done initiatives, Painting, Material Condition Improvement Plan, Maintenance backlog reduction, Plant labeling, Operating and maintenance procedures, Mixed waste disposal, Station heat improvements, Design reviews, Contract work analysts, SBM switches

157 Staffing actions to fill position vacancies and increase staff experience levels are continuing. In addition, resources have been budgeted for staff augmentation on a temporary basis during peak activity periods.

158 LCS Unit 1/Unit 2 Restart Plans address the ISA issues requiring short term focus.

159 Long-term issues will be addressed in future Operational Plans.

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160 The recommendations from the root cause investigations of this event are tracked in the Management Review Meeting report reviewed monthly by the Site Vice President and the CNOO.

161 The completion of the LCS Unit 1/Unit 2 Restart Plan will address all of the issues discussed within the January 27, 1997 NRC letter.

162 In the future, Operational Plans will be used to continue to build on the improvement efforts initiated from the LCS Unit 1/Unit 2 Restart Plan.

163 LCS will adopt and implement the new NOD-wide Corrective Action Program later this year.

164 The Restart Program consists of four phases as follows: Work to be completed prior to unit restart; Work completion; Restart and Operational Readiness Evaluation; and Unit Restart and Power Ascension.

165 Comprehensive evaluations are being conducted to define the scope of work requiring completion prior to unit restart.

166 Hardware oriented items are evaluated by the Scope Control Committee and items that are significant in scope are reviewed by the Senior Management Review Committee (SMRC).

167 A thorough assessment of the readiness of the LaSalle plant, personnel, and work processes to safely begin unit restart and initiate power operation will be completed and used as input in the decision by the Site Vice President to proceed with unit restart.

168 Detailed guidance for the conduct of self-assessments will be developed as part of this LCS Unit 1/Unit 2 Restart Plan.

169 An additional element of this process will be the development and approval of a Restart and Power Ascension Plan that summarizes the key actions, milestones, management approvals and contingencies that will be implemented during the restart process. Additional input regarding the readiness of the LaSalle plant, personnel and work processes will be obtained from the PORC, independent oversight organizations such as the SRB, SQV and from other inputs at the discretion of the Site Vice President.

170 plant operators will initiate restart and power ascension in accordance with an approved Restart and Power Ascension Plan.

171 Many detailed action plans are being developed throughout the station to implement these improvements. The Restart Action Plans, discussed above, support improvements in these five keys areas while implementing the specific corrective actions required for unit restart.
Management Leadership and Effectiveness *Performance Improvement Actions:* Recruiting management personnel with industry experience at plants that have achieved excellence in nuclear safety, have participated in significant performance improvement programs and/or who have demonstrated the ability to sustain high standards for safety performance;

172 Implementing a limited unitization of the Station organization (Operations, Maintenance and Work Control)

173 Consolidating safety assessment and other oversight functions to provide organizational focus and broadened oversight responsibilities. A new management position has been established to focus this effort and to drive safety performance improvement;

174 Implementing regularly scheduled department self-assessment reviews with the Site Vice President and the Plant General Manager to reinforce

175 Establishing the SRB and re-focusing the PORC

176 Creating an Engineering Assurance function

177 Implementing definitive management actions to reinforce expectations for human performance and to solidify

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178 Reallocating personnel and reassigning responsibilities to ensure supervisors spend more time coaching, mentoring and reinforcing standards

179 Developing and using performance indicators
Ensuring that personnel follow procedures

180 Performing an independent review of key engineering work products (e.g., operability evaluations, safety evaluations and root cause analyses) using experienced external engineering personnel as a method to both raise the job performance standards and train LaSalle personnel on how to achieve those standards

181 Implementing work control process improvements to allow work to be efficiently completed in the field and to minimize the occurrence of inadequate work packages

182 Including critical work processes and programs in the scope of department self assessment activities and implementing self-assessments focused on specific programs,

183 Developing performance measures for critical work processes

184 Implementation upgrades in the Corrective Action Program to

185 Implementing aggressive actions to fix plant deficiencies through the Material Condition Improvement Program and resolution of operator distractions through completion of the Restart Plan; Using the Corrective Action Program to drive identification and resolution of potential plant material condition deficiencies through review, evaluation and trending of PIFs;

186 Redefining the System Manager job requirements and performance expectations to exclusively focus on system management, i.e., ensuring that each system is capable of performing its design functions on a reliable basis; and Raising standards for acceptable plant material condition through in-plant walkdowns and inspections.

187 LaSalle is using a number of mechanisms to monitor progress and measure effectiveness. The Site Vice President and Plant General Manager conduct regular self-assessment meetings to monitor restart preparation. The station conducts frequent Restart Plan Review meetings.

188 The station has a monthly Management Review Meeting (MRM) at which the Site Vice President and CNOO review the performance of key functional areas.

189 The station has scheduled a SRB meeting in April 1997, to review the status and effectiveness of the LCS Unit 1/Unit 2 Restart Plan.

190 Enhanced communication of management expectations for staff performance occur at weekly performance review meetings for all senior managers at the department head level and higher.

191 Zion has recently put in place a unitized organization to speed improvement efforts. This organization change consists of a limited unitization of the Station organization, focused on Operations, Maintenance and Work Control.

192 The existing organizational structure, within the Maintenance and Operations organizations will essentially be replicated for each unit, with some few exceptions related to specialization of responsibilities for some individuals.

193 The station has been provided with sufficient resources to complete its planned improvements in 1997. The Operating and Maintenance budget for Zion for 1997 totals $157.6 million dollars. This represents a 30% increase over the 1996 budget, and a 5% increase over actual 1996 year end spending levels.

194 The station's budget for capital improvements in 1997 is $17.7 million dollars, an increase of $5.9 million dollars over last year.

195 In addition, resources have been budgeted for contract personnel and staff augmentation, on a temporary basis, during peak activity periods. Among the key improvements currently funded are: Backlog Reduction in Several Key Areas, Work Execution Improvements, UFSAR Reviews,

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Design Bases Reconstitution and Validation, Reactor Coolant Pump Motor Refurbishment, Safety System Reviews, Procedure Improvements

196 experience recurring events caused by inadequate procedures, failure to follow procedures, and by ineffective and untimely corrective actions. The 1997 Operational Plan contains significant actions to resolve these continuing performance concerns.

197 To improve performance in planning, scheduling, and conducting routine maintenance, Zion management refocused efforts to more effectively implement a "12 week rolling" work planning and scheduling process.

198 a key area of focus for improvement in the 1997 Operational Plan is additional improvement in engineering support. As noted in Section 4.3 of this attachment, additional actions were initiated in 1996 and will continue in 1997 at all six sites to address concerns with engineering quality, the accessibility and quality of design basis information, and system readiness.

199 As a short term plan to improve the corrective action process, the threshold for generating PIFs was lowered, and daily line management involvement in their review and resolution was increased.

200 Notably, in May, 1997, Zion Station will implement the enhanced Corrective Action Program, using the program that has been developed by representatives from all six ComEd sites and the corporate office as a model. This program is further described in Section 4.5 of this attachment.

201 shift crew performance will be improved by implementing high performance standards, a management observation program to feedback performance improvements to Operations and improved shift and external communications.

202 enhanced support will be provided to Operations by establishing improved support processes (surveillance control, OOS and status tracking, reliability risk management, and plant labeling) for shift operations that will provide assistance to the crews in eliminating personnel errors and plant challenges

203 a front-end process will be established to ensure quality procedure revisions are issued to the field

204 standards and practices for the station radiation protection program will be upgraded.

205 <u>Performance Improvement Management</u> This strategy addresses how station performance will be assessed to assure improvement. The strategy is implemented through action plans increasing management oversight of field activities, implementing an effective self-assessment program, improving the PIF and root cause analysis processes, and improving the management of the station's formal commitment tracking system.

206 Work management processes will be clarified and streamlined in this strategy and training on these processes improved. The Operations Work Control Center concept will be used to improve the control of work activities. Action Request and Work Request backlogs will be screened, prioritized and reduced. Multi-disciplined teams will physically walkdown plant structures, systems, and components to identify undocumented material deficiencies.

207 by prioritizing and managing the work necessary to support plant goals. . It addresses long-standing material condition issues and provides more systematic approaches to measuring equipment and system performance, supporting operations and maintenance, and correcting plant deficiencies. The strategy will establish a process to categorize and prioritize the backlog of open engineering work, and will improve the overall quality of Safety Evaluations. The System Engineering support program will be revised to be consistent with the best industry practices.

208 <u>Management and Personnel Development</u> This strategy develops the capabilities and depth of the organization. This includes training, skills development, outside recruiting, and a substantially increased management involvement in the accredited training program. Required management and supervisory skills will be identified, personnel will be evaluated against these

attributes, and appropriate development activities will be conducted. Instructor skills and training lesson plans will be upgraded. The System Engineer training program will be upgraded. The strategy will also address upgrading craft skills and qualifications.

209 The processes and procedures used to control the traceability, integrity, consistency, and retrievability of design basis information will be improved, and periodic assessments of the program effectiveness will be conducted.

210 NRC concerns with personnel errors, operational performance, configuration control problems, and radiation protection procedures will be addressed by the 1997 improvement strategy entitled "Conduct of Operations."

211 The effectiveness of work planning and control processes, quality of routine work activities, and equipment problems challenging operations will be addressed in the strategy entitled "Getting Work Done."

212 Engineering issues will be addressed within the strategies entitled "Engineering and Technical Support" and "Design Basis Management."

213 ComEd management has committed to keep both units shutdown until corrective actions have been taken to ensure safe operation. These corrective actions regarding personnel performance, along with the results of the ComEd investigation of the event, will be submitted to the NRC in response to the Confirmatory Action Letter. The 1997 Operational Plan will also be modified as appropriate to address the depth of issues surrounding this event.

214 Day-to-day management of each strategy within the 1997 Operational Plan will be assigned to a Zion manager who will be responsible for assuring satisfactory progress.

215 Each strategy manager will manage the overall performance of the related action plans, and report the performance results to the management team. The strategy manager will also control changes, additions, and deletions to the related action plans.

216 The Site Vice President will establish expectations for performance results, monitor plan results, establish accountability, and provide overall plan leadership.

217 The responsibilities of the action plan manager will be to develop the implementing plan and ensure that it is effective. In reviewing the action plan, the responsible manager will verify that it can be implemented and is capable of achieving its objectives.

218 The Zion management team (Site Vice President and Senior Managers), as assisted by the strategy manager, will provide a forum for review of plan effectiveness. The results of the strategies, and the removal of any barriers to successful completion of the action plans, will be discussed at weekly review meetings.

219 Site Quality Verification will provide independent assessments of the 1997 Operational Plan. Their assessments will focus on the success in achieving the results specified in the action plans and on verifying that the results ultimately support the strategies and key performance measures. SQV will provide assessment reports to management at the weekly performance review meetings.

220 The site communications director will prepare graphical posters of the key elements of the plan and periodically post plan performance results. The intent is that all site employees will see visible, high-level results from the plan as progress occurs through 1997. Periodic major milestones and results will be communicated through internal written media.

221 On a monthly basis, the site presents key performance indicators to NOD senior management at the Management Review Meeting.

222 Major improvement initiatives are funded, and the level of funding to support daily operation is sufficient

223 Staffing levels are being increased based on best-performer benchmark data.

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224 In addition, resources have been budgeted for staff augmentation on a temporary basis during peak activity periods.

225 The Getting Work Done (GWD) Plan used dedicated work teams (Fix-it-Now Team and a Work Analyst Team) to reduce work backlogs and improve schedule adherence on work tasks. The Fix-it Now (FIN) Team is utilized to protect execution of the weekly work schedule by assuming responsibility for all emergent work requirements that arise during the week.

226 The Work Analyst Team has been superseded by a new team that includes Braidwood and Byron Station in a combined effort to model the work practices between the two sites and develop a Standardized Work Procedure.

227 The Fix Long Standing Problems Plan implemented plant changes to resolve and reduce temporary alterations, operator workarounds, equipment focus items and other priority issues.

228 The Improve Work Execution initiative was created to look at the actual performance of work and develop ways to provide a better work plan to the work force as well as improve lessons learned from the execution phase. The initial teams of Improve Daily Work Assignment, Improve Daily Job Statusing, Improve Shift Turn Over, Establish Proper Pre-job Briefs, and Establish Proper Post-job Critiques completed their work as of January 1997. An ongoing effort on the Improve Work Execution initiative is continuing to develop the best set of indicators to track continuous improvement of execution of work.

229 To reduce the number of errors associated with the OOS process, the following actions have been taken: Re-location of the OOS writers to enhance communications; Development and management monitoring of performance indicators in the conduct of OOS activities; Advance preparation of OOS prior to the execution week; Providing guidance on the bundling of OOS requests; and Dedicated Nuclear Station Operators in an OOS group to maintain their proficiency in OOS preparations.

230 The actions implemented to improve the management of the plant configuration include: Establishment of the Work Execution Center; Reassignment of administrative duties from the Unit Supervisors; Heightened level of communication with the control room regarding work planned and in progress; and Establishment of a 3 year frequency for the performance of plant lineups for all systems.

231 Actions have been identified and initiated to resolve the problem with adherence to plant procedures.

232 The Corrective Action plan incorporated the following salient features: Senior Management sponsorship of events requiring root cause investigations, with the investigation reports reviewed and approved by the PORC committee; Clear expectations and responsibilities for Root Cause Investigators; Completion dates for all Level III and above corrective actions; Station Manager review of overdue corrective actions, and Station Manager approval required for due date extensions; Effectiveness Reviews of corrective actions associated with significant conditions adverse to quality; and Senior Management participation in the Event Screening Meeting.

233 The NOD CAP will be piloted at Byron in March and April of 1997

234 With respect to improving CAP effectiveness, strong Senior Management support has been provided to improve the problem classification, investigation thoroughness, and appropriateness of the corrective actions. Effectiveness reviews for these corrective actions are routinely performed. Line management ownership of the issues is ensured, and the daily screening meeting provides Senior Management the forum to review the problems reported on a daily basis. This meeting also allows the proper priority to be assigned for problem resolution. These interim measures will be maintained until the NOD corrective Action Program is implemented in May 1997.

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235 The first full scale implementation of the action plan initiative will be the March refueling outage for Unit 1.

236 The effectiveness of this strategy will be assessed after the completion of the outage.

237 Dedicated planners from the three maintenance disciplines, in addition to dedicated Operations planners, have been added to the Planning organization.

238 Operational configurational control has been improved significantly through the implementation of the Work Execution Center, which is a centralized work authorization center under the direction of a licensed supervisor.

239 Braidwood has allocated significant resources to eliminate the backlog of drawing revisions, enhanced the controls over temporary modifications, conducted training on design basis compliance, and reviewed open designs and tests for potential discrepancies.

240 A design basis improvement initiative will validate the critical components of the design basis. Where deficiencies are noted, the impact will be promptly assessed, and the resolution prioritized and scheduled.

241 The 1996 focus areas will continue to be focus areas for 1997. This information is currently being synthesized into departmental performance measures and being incorporated into all station management performance evaluations. All individual performance criteria are expected to be identified by March of this year.

242 Performance is monitored and reported on a daily basis at the Braidwood Leadership Meeting.

243 Also reported on a daily basis in the station newsletter are key human performance indicators.

244 On a monthly basis, the site presents performance indicators at the Management Review Meeting conducted by the Site Vice President in conjunction with the CNOO.

245 Additionally, each Operational Plan/Improvement Initiative discussed in Section 5.5.4 above incorporates measurement standards by which action plan progress and objective realization are judged.

246 Internal to the departments at Braidwood, performance attributes specific to the department are monitored to a finer level of detail. As an example, the Operating department utilizes a Scorecard Program to monitor crew performance. Each operating crew is assessed against a set of well defined and communicated expectations. In the Maintenance areas, an example of the type of performance monitoring undertaken is the tracking and analysis of rework. Rework in each department is analyzed to determine if it was caused by defective parts, skill or knowledge deficiencies or design deficiencies, among other causes. The information gained by this detailed performance monitoring is an input to the quarterly self assessments conducted by each department.

247 Major initiatives and projects are funded to ensure

248 In addition, resources have been budgeted for staff augmentation on a temporary basis to support various improvement projects at the site.

249 In addition to the replacement of the Unit 1 Steam Generators, improvements to the physical plant, upgrading of programs and backlog reduction initiatives are planned and funded through 1997. Key improvements currently funded include: Powerblock Work Request Task Backlog reduction, Non-essential Service Water check valve replacement, Essential Service Water Cooling Tower Piping upgrades, 125 VDC Safety Related Battery Replacements, River Screen House Blowdown De-icing Line, Rod Drive and Inverter Cooling Systems, Improved Technical Specification preparations (implement 7/98), Human Error Reduction Training, DRPI & CRDM Connector and Cable Upgrades, 4 Kv and 480v Breaker refurbishments, Fuel Handling system upgrades, UFSAR & Fire Safe Shutdown Analysis Reviews, Solid State Protection System Maintenance Program, Main Control Room Upgrades

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250 In 1996, several programs were implemented to improve site performance in the areas of human performance. In 1997, these programs, including those described below, will continue. Some of these programs include: *Human Error Reduction Training*

251 This training has been expanded in 1997 to include plant personnel, security, and contractors. *Filed Observation Reporting Program, MARC Training*

252 A final class has been scheduled for May/June 1997.

253 Ongoing process improvements have been implemented for a number of years, including working with recognized experts to improve trending.

254 Effectiveness reviews for corrective actions are performed routinely. PIFs are reviewed daily by Senior Management.

255 Several programs were implemented in 1996 and will continue to be improved in 1997 to maintain and improve the material condition of the site. These programs include: *The Operator Work Around (OWA) Program, The Material Condition Monitoring Program*

256 Systems are monitored by the System Engineer and a window color (Green, White, Yellow or Red) is assigned based on various material condition inputs.

257 Work priorities in 1997 will continue to be driven by this System Windows program. Performance standards are also under development to monitor improvement.

258 200 Design/Licensing Basis Reviews were initiated in 1996 and are continuing in 1997.

259 Site engineering at Byron Station has transferred and maintains ownership of all architect engineer design drawings and calculations.

260 Byron Station has an active self assessment program that is directed by the Site Vice President.

261 Every department head along with selected members of the department meet with the Site Vice President and Station Manager on a semi-annual basis to discuss department performance, identifying strengths and weaknesses. During each self assessment period, four "core" topics are reviewed: *Self Initiated Departmental Topics, Vision and Values, Training, Departmental Goal Status.*

262 Further improvement of the SQV Department's assessment capabilities will be pursued in 1997. The following basic strategies will achieve this objective: Perform assessments of potential performance issues utilizing the "surveillance process", Increase the use of Subject Matter Experts for audits, Perform discretionary audits (program reviews) of potential performance issues, Obtain personnel resource commitments from the Site Vice President for assessments, Response to department requests for specific audits.

263 Byron Station will continue the implementation of improvements in the work control process during 1997. Some of these improvements include: *Action Request Screening, 5 Week Work Control Process* - This process is scheduled to be implemented starting March 10, 1997 and completed in July, 1997.

264 On a monthly basis, the site presents performance indicators at the Management Review Meetings.

265 An "Engage the Workforce" team has been put in place to develop and implement methods of communicating key performance indicators to all site personnel to increase overall site awareness of performance.

266 the Plan of the Day meeting is being restructured to communicate and discuss key performance measures and current issues at the site.

267 The Board revitalized its NOC by adding members with extensive nuclear management experience, including experience managing multiple reactor organizations.

268 The Board specifically chartered the NOC to provide aggressive oversight of ComEd's nuclear program performance and to keep the Board apprised of safety and performance issues.

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269 The NOC conducts site visits to determine whether nuclear program management actions are appropriate and effective.

270 The NOC of the Board will monitor a set of NOD indicators and report to the Board at Board meetings.

271 The CNOO (typically monthly) conducts Management Review Meetings at each site, focusing on safety performance and the effectiveness of improvement initiatives.

272 The Corporate assessment and audit function will be strengthened by applying the requisite resources and by establishing a living schedule for corporate audits and assessments to be performed at each site and NOD.

273 To ensure that multi-site trends and lessons learned at particular sites are recognized and acted upon, audits will be analyzed by the NOD Nuclear Oversight group as well as the individual sites.

274 Each site will submit standardized performance information for senior management review. The periodic review process is utilized to demonstrate leadership and transmit expectations for performance.

275 The Board and senior management are focusing on remedying not only the problems at individual sites, but on improving the nuclear program as a whole through the commitment of the full financial and management resources of the corporation to the nuclear program.

276 The Board substantially increased resources for the nuclear program.

277 The NOC of the Board will provide to the Board timely and independent information concerning the nuclear program, and ensure line management is held accountable for meeting Board performance expectations.

278 Support of the nuclear site's Electronic Work Control System (EWCS) which is used to plan and control work at the nuclear stations, has been made the highest priority of the ComEd Information Systems organization.

279 Senior managers outside of NOD have become engaged in stronger efforts to support the nuclear program, resulting in improvements in computer hardware, human resources and compensation, parts control and availability, financial controls, and security.

280 The new NOD senior management team is establishing Division-wide performance measures and criteria to provide stronger oversight.

281 NOD and site budgets have been developed based upon the performance issues facing each site and then aggregated to form the NOD budget. In the past, site budgets were established by dividing a pre-defined nuclear program budget.

282 A standardized business planning process has been established to improve long range planning and accomplish and sustain performance improvements. Improvement actions are funded in station budgets.

283 The Nuclear Operation Committee to the Board has been tasked with oversight of nuclear program activities which includes monitoring performance of operations, engineering and corrective action functions. Standardized performance indicators are being developed and will be presented at NOC of the Board meetings.

284 Design records were transferred from contract design engineering organizations to ComEd.

285 A design basis and UFSAR validation effort has been initiated throughout NOD.

286 Following the NRC ISI at Dresden and the Engineering and Technical Support Inspection at Zion, broad initiatives (e.g., the Engineering Assurance Group) were initiated to ensure that each site has sufficient engineering support and that we can have confidence in plant design bases.

287 A standardized corporate corrective action program, based on a review of industry programs, is being implemented throughout NOD. The program includes specific performance measures to gauge program effectiveness. A corporate corrective actions group is being established to ensure the appropriate response to site and industry events.

288 Root cause and trend analysis specialists are being trained for each site and for corporate NOD offices.

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289 Specific objectives were defined for 1996-97 to improve engineering support, including milestones for measuring progress. Many of these objectives were described in detail in our January 31, 1997 letter on design basis conformance.

290 Each station and NOD are reviewing the ISA causes, the Dresden NRC Independent Safety Inspection results, and the causes identified in the NRC 50.54(f) letter to ensure causes and lessons learned are addressed at all ComEd stations.

291 The site self-assessment and oversight capability is being strengthened by realigning the site assessment and performance monitoring organizations to report to the Site Quality Verification manager at each station.

292 Procedures have been revised to provide more concise direction for site personnel regarding initiation criteria for problem reporting.

293 Specific steps have been taken to ensure problem reporting by engineering personnel.

294 An audit program of engineering contractor organizations has been established to determine design control and calculation quality.

295 Extensive training, site meetings and formal communication devices have been used to communicate management expectations to site employees.

296 The Board's NOC is independently and objectively evaluating line management decisions, and keeping the Board informed of problems and the actions necessary for continued improvement.

297 The NOD was reorganized in 1996. A new CNO and CNOO with substantial experience in both plant turnaround situations and sustaining strong performance were appointed.

298 To strengthen first-line supervisor development, ComEd management has upgraded management development, selection and succession planning processes; conducted first-line supervisor skills and leadership training; and expanded master craftsman skills training.

299 Joint Leadership Team meetings composed of senior ComEd and bargaining unit representatives are conducted every two weeks to improve management and bargaining unit relations and communications.

300 The Peer Group Program has been established to develop standard practices and processes to be adopted throughout NOD.

301 A NOD-wide formal program for evaluating, sharing, and assessing the effectiveness of responses to lessons learned at both ComEd and other nuclear stations is being implemented to assure lessons learned are being shared and responded to throughout NOD.

302 A standardized business planning process has been established to accomplish key improvements. In addition, these plans provide a means to measure progress and determine whether improved performance is being achieved.

303 Root cause specialists are being trained who will be responsible for error trending and performance for quality self-assessments.

304 Standardized performance measures are being implemented to gauge processes and effectiveness of corrective actions.