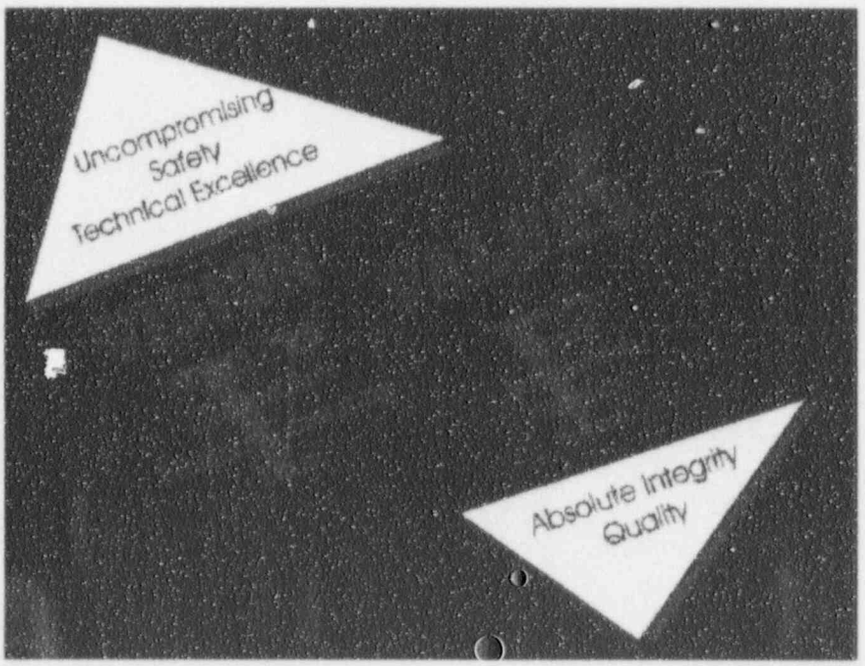
LaSalle Nuclear Power Station

Course of Action

(Formerly Management Overview)

Revised to include issue reference numbers

April 1995



ComEd

A Unicom Company

May 9, 1994

STATEMENT OF THE SENIOR VICE PRESIDENT AND CHIEF NUCLEAR OFFICER

As Senior Vice President and Chief Nuclear Officer of Commonwealth Edison Company, I want to underscore my commitment to support the LaSalle Station Generating Team's initiatives set forth in the Business Unit Plan (BUP) Overview. Over the next three years, plant performance and reliability will be improved to a level equal to or better than the industry average. In the longer term, I expect we will achieve a performance level equal to the best industry performers. Although the continued safe operation of the plant is not in question, significant areas for improvement have been identified by ourselves and others. Whether viewed through the eyes of our customers, our employees, our stockholders, or our regulators, the continued safe operation of LaSalle is our most important concern.

In the past, we have developed improvement plans but did not completely implement them. Hence, certain identified issues persisted. Our efforts are not focused on executing our plans and sustaining measurable and substantive results. To accomplish this objective, we are establishing an aggressive corrective action culture founded upon intrusive management techniques, timely and formal problem identification, root cause analysis, as well as close management oversight of personnel performance and equipment performance and trends.

The purpose of the BUP is to focus the collective intelligence and work ethic of the LaSalle Nuclear Generating Team on upgrading LaSalle Station, first, to a level of good performance and, eventually, to "World Class" performer status. Several actions have been undertaken to develop our BUP and fulfill its purpose. In October 1993, the Business Development Team (BDT), a self-assessment group, reviewed Station performance to identify problem areas. The BDT Report focused our attention on areas in need of improvement. In January 1994, LaSalle Station focused a broad group of Station employees and management to develop detailed action plans that address the BDT and other self-assessment findings, for the BUP. The BUP will serve as the cornerstone of our improvement efforts.

It is important to note; that we have not waited for the development of the BUP to take actions addressing performance issues. Maintenance and Refuel Outages were conducted at both LaSalle Station units to begin upgrades to their materiel condition.

We are embarking on a proactive effort to assess the overall materiel condition and readiness of the systems and equipment important to safe and reliable operation of the units, identify important problems and correct problems in a timely manner. Examples of other immediate improvement efforts that are independent from the BUP include the strengthening of management, and the efforts taken to improve problem identification and commitment tracking.

The last two years have witnessed major structural and cultural changes in our nuclear operations. Structurally, we have established the position of Site Vice President and accorded that individual total responsibility and accountability for the Station's success. The Site Vice President position provides leadership and will be used to establish an uncompromisingly high standard of performance. Leadership also has been strengthened at LaSalle Station by appointing experienced senior management personnel with proven performance records at other companies. During the past year, we have deployed many of the Corporate support services directly to the sites. The biggest move has come in transferring Engineering Services to the sites to provide prompt and interactive support. These actions already have set our course for betterment.

I wish to state unequivocally that I, together with our Chairman and Board of Directors, are committed to providing the resources, both personnel and fiscal, to achieve and maintain a high level of performance at LaSalle Station. Our commitment to sustained improvement at LaSalle Station will be driven by our desire to attain our goals for improved performance and eventual excellence. We will take those actions necessary to address outstanding issues, not just their symptoms. These actions will assure that, guided by the strong sense of responsibility felt by the LaSalle Station and Corporate Management Team, the job gets done.

Michael J. Wallace
Senior Vice President

May 9, 1994

STATEMENT FROM THE SITE VICE PRESIDENT

The attached Business Unit Plan (BUP) Overview describes the improvement actions to be taken at LaSalle Station over the next three years in accordance with the multi-year LaSalle BUP. This overview describes the activities through which we will achieve measured, improved performance in operations at LaSalle Station. The anticipated performance improvements will take LaSalle to a position of steady performance comparable to at least the average of operating plants with this three year program. Over the longer term, we will move towards excellence in all that we do, making us a leader in nuclear power operations.

It is important we all understand that there has been clear evidence of declining performance in the LaSalle units. Although I believe the continued safe operation of the plant is not in question, there has been degradation in the materiel condition of those systems and equipment important to the safe and reliable operation of these units. Further, we have had repeated instances of our personnel not complying with the policies and procedures, including in the radiation protection area, that are essential to the proper conduct of work and safe plant operations. These issues did not develop overnight. They are not caused by any one organization or individual -- we are all responsible. Likewise, we cannot expect to solve these problems overnight. However, we can solve them in a timely manner if we work effectively together in identifying and resolving the important underlying causes.

A common thread to the problems we are experiencing has been ineffective management and leadership, which is my responsibility to correct. I have taken important and substantive first steps in providing effective and demanding leadership at LaSalle. Drawing on a mixture of talent and experience from within Commonwealth Edison and from other nuclear facilities, I have selected a new senior management team. This includes Mr. Don Ray, our Station Manager, who joined us in January of this year and is setting high standards of performance for all Station personnel. Senior managers need and will demand the full cooperation and support of all the personnel on this Site, and many from Corporate, to lead LaSalle Station to steady, measured improvement.

The Business Development Team efforts, in which many of you participated and provided your knowledge and experience, has provided an extensive list of issues and corrective actions which provide an important underpinning for our improvement program. The observed problems, identified causes, and ongoing corrective actions will be continually challenged as we implement our BUP to ensure that substantive issues and causes are successfully resolved.

I expect each of you to read and understand the attached Business Unit Plan Overview, not only in your areas of responsibility and interest, but in all areas. Further, in the areas of your specific responsibilities, I expect you to be fully cognizant of the detailed actions plans. Jim Gieseker and his team are dedicated to the successful deployment and execution of the BUP. They will assist line management personnel, who are responsible for the implementation of the plan, in keeping the plan up to date, ensuring that actions are carried out as scheduled, ensuring that completed actions meet the original intent as defined by the BDT Action Teams, and measuring the effectiveness of the completed actions.

I am depending on each of you, and fully expect your cooperation in achieving the success of this improvement program. Do not be hesitant to suggest further improvements or course corrections, or to identify your need for additional technical or management resources to ensure successful implementation of the BUP. We all want Commonwealth Edison, and particularly LaSalle Station, to be viewed as being successful in completing this improvement program, and as being leaders in the nuclear power industry. Together, we will satisfy that desire.

Warren Murphy
Site Vice President, LaSalle County Station

EXECUTIVE SUMMARY

The Overview describes the improvement actions to be taken at LaSalle Station over the next three years in accordance with the multi-year LaSalle Business Unit Plan (BUP). Although the continued safe operation of the plant is not in question, LaSalle Station management and personnel have identified significant areas for improvement. As summarized below, there has been degradation in the materiel condition of important plant systems and equipment. Further, personnel have not constantly complied with policies and procedures, including in the radiation protection area, that are essential to proper work practices.

Management and leadership issues are the common thread in the Station's declining performance trends. Important and substantive steps already have been taken to provide effective and demanding leadership at the Station. Drawing in a mixture of talent and experience from the CECo and from other nuclear utilities, a new management team has been assigned at the Station. As discussed below, senior management will demand the full cooperation and support of all Station personnel to lead LaSalle to steady, measured improvements in accordance with the BUP.

The LaSalle Business Unit Plan

Station management has developed an improvement plan -- the LaSalle BUP -- to improve performance over the course of the next three years. The BUP is comprised of discrete, auditable action plans that serve as the working-level documents through which Station personnel will schedule, develop and be held accountable for necessary improvement actions. This Overview outlines the key issues addressed by the BUP and summarizes the activities that will be taken to resolve LaSalle's performance issues and reverse the Station's declining performance trend. Although other issues are addressed in the BUP and its corresponding action plans, the Overview focuses on those issues which are most significant to addressing LaSalle's declining performance trends.

Eight major focus areas are key to the improvement at LaSalle Station: (1) Management and Leadership; (2) Radiation Protection; (3) Materiel Condition; (4) Issues Management; (5) Workforce Management; (6) Maintenance; (7) Engineering; and (8) Operations. The issues and objectives addressed in each of the eight major focus areas are summarized below:

- **Management and Leadership**

Management and leadership issues were key contributors to declining performance at LaSalle Station. Key leadership positions in the Station organization have experienced a high level of turnover since 1992. For example, the Station Manager position was filled by four different individuals over a thirteen month period. Further, management over-emphasized the importance of achieving short-term production goals at the cost of accepting temporary fixes without a commensurate focus on long-term issue resolution. Additionally, Station management did not effectively communicate high performance standards and expectations thereby contributing to issues involving poor work practices and procedure adherence.

The first step in achieving sustained improvement at the Station has been the formulation of a new Station management team. Mr. Don Ray, the new Station Manager, joined LaSalle in January of 1994, bringing a proven record of management and technical excellence. In addition, most of the Site Vice President's and Station Manager's direct reports (e.g., Operations Manager, Maintenance Superintendent , and Site Engineering and Construction Manager) have been replaced with individuals who have been judged to have the skills and experience necessary to successfully implement and achieve performance improvements at the Station. These individuals will demonstrate and reinforce strong leadership behavior across the organization through mentoring.

Additionally, Station management will clearly define and communicate standards and expectations, particularly regarding materiel condition, radiation protection practices, procedure adherence, and long-term issue resolution. Personnel accountability for meeting these expectations and standards will be reinforced through performance planning and review processes. Managers will enhance their monitoring and assessment of Station performance, in part, through the implementation of a comprehensive self-assessment process. (See Section II.1)

- **Radiation Protection**

LaSalle Station has a high collective radiation exposure level and has experienced a number of radiation events. These are the result, in pertinent part, of management-related issues including low performance standards, an acceptance of poor work practices, and an unfocused effort to reduce source terms. In addition, Radiation Protection (RP) management historically lacked credibility among the workforce -- a situation that impeded its ability to effectively and consistently control work. Coupled with Station personnels' lack of a fundamental knowledge and awareness of good radiation work practices, this perception of RP management led to complacency and lax adherence to RP rules and guidelines.

To effectively resolve the Station's RP issues, it is necessary to clarify management expectations for strict adherence to all RP policies, procedures, and instructions. This goal is being accomplished, in part, through additional radworker training and team building sessions within the RP Department. In addition, all managers and supervisors at the Station are now responsible for ensuring that their staff personnel are practicing -- and held accountable for practicing -- the fundamentals of safe radiological work performance on a daily basis. To promote such accountability, a full time two-man monitoring crews have been posted at each Radiological Protection Area (RPA) access point to verify proper dosimetry, monitor materiel taken into the RPA, and discuss the requirements of Radiation Work Permits. Further, the number of RPA access points has been reduced from six to two in order to control the amount of materials and tools entering and exiting the RPA. (See Section II.2)

- **Materiel Condition**

The materiel condition of Station equipment has declined and placed an additional burden on Operators, particularly when responding to transients. Materiel condition issues can be categorized into four areas: (1) programmatic issues; (2) Maintenance performance; (3) equipment design and reliability; and (4) resource utilization.

A proactive effort patterned after the Vulnerability Assessment performed at Quad Cities and Dresden is being initiated to identify problems and weaknesses in the overall materiel condition of systems and equipment important to the safe and reliable operation of the LaSalle units, and to determine and implement any required corrective actions. The result of this effort will be to provide a high level of assurance of the readiness of these systems and equipment to function when called upon, and not potentially distract and confuse the operators during transient events.

Actions are underway to prevent the recurrence, as well as to address existing materiel condition issues at the Station. The Materiel Condition Program will be enhanced through: the clarification of Maintenance, Engineering, and Operations' roles, including greater System Engineer responsibility for the review of system materiel condition; implementation of a special Maintenance crew (Corrective Action Team -- CAT); and reduction of the Work Request Backlog. Resource utilization will be improved through the implementation of a central Work Control Center and a Station-wide Issues Management system. Technical support for the resolution of materiel condition issues will be strengthened through the addition of senior System Engineers selected by a Corporate Review Board, closer working relationships with the Station's Architect Engineering organization, and the support of a dedicated Root Cause Analysis (RCA) group that will mentor Station engineers to improve their RCA capabilities. Station personnel have begun to make substantial improvements in the materiel condition as described in Attachment 1. These efforts will continue to be aggressively pursued as described in the BUP Overview. (See Section II.3)

- **Issues Management**

Issues Management broadly encompasses the Station's efforts to more effectively plan and execute work activities. The subset of issues important to the decline in Station performance includes problem identification and resolution, self-assessment, and Quality Verification (QV). Some Station personnel lacked confidence in the effectiveness of the problem identification and resolution system and, therefore, did not always use it to report problems. During a recent reorganization, the Corporate group which performed assessments of Station performance was eliminated. The Station failed to incorporate an alternative, effective self-assessment function prior to the elimination of this group. Further, deficiencies identified by the QV organization were not always aggressively pursued and resolved by Station personnel.

Station personnel are being trained on the Integrated Reporting Program that is being used for problem identification. Several management committees (IRP, the Event Screening Committee that is chaired by the Station Manager) have been formed to increase the aggressiveness that is used to address and resolve problems identified by Station personnel, thereby increasing their confidence in the responsiveness of Station management. A Self-Assessment Director has been appointed to promote self-assessment capabilities and provide training to Station management and personnel on methods to monitor and identify corrective actions for adverse performance trends. Station responsiveness to QV findings will be heightened through Station management's frequent review of outstanding and overdue QV issues. (See Section II. 4)

- **Workforce Management**

Managers did not consistently establish and communicate their expectations or performance standards. Nor did they hold Station personnel accountable for unsatisfactory performance. This led to confusion in the workforce about what was expected by Station management regarding procedural compliance and procedure adequacy. Complicating the situation were lengthy procedures, cumbersome procedure change processes, and poor work practices. Although the specific type of issue varies from department to department, they appear in some form throughout the Station.

Station management currently is reinforcing its expectations regarding procedure compliance and work practices through "expectation" seminars for all Station personnel. LaSalle Administrative Procedures will be reviewed to ensure the definition of clear and consistent policies governing procedure adherence. A mechanism will be developed to review procedures that have been identified as cumbersome to eliminate non-essential and confusing information. A single coordinator will be assigned the responsibility of reviewing the procedure modification process. This review will provide a basis for developing a process that is more efficient. (See Section II.5)

- **Maintenance**

There are inconsistencies in the application of Maintenance work practices such as foreign material exclusion, control of job sites, and radiological work practices. A separate process does not exist to prioritize, plan, and schedule actions to address facility minor Maintenance and housekeeping deficiencies. As a result, such issues are funneled into the Nuclear Work Request (NWR) program where, due to their low priority status, they are not immediately addressed and contribute to the backlog of work requests. Weaknesses also exist in the work control process. For example, multiple directions specified for work package preparation have led to cumbersome and complex work packages, on one hand, and work instructions that lack appropriate detail, on the other.

Maintenance work practices will be improved, in part, through improved pre- and post-job briefings for mechanics, the establishment of a comprehensive set of performance indicators, training to develop the Maintenance staff's observation and trouble-shooting skills, and the use of practical mock-up exercises. The work request backlog will be screened to transfer minor Maintenance and housekeeping activities to a Corrective Action Team and thereby eliminate duplicative work requests and properly scale maintenance activities commensurate with their safety significance. A Work Control Center (WCC) will be implemented and staffed with Maintenance, Operations, and Work Planning personnel. The WCC will improve inter-departmental communications and the coordination and scheduling of work activities. (See Section II.6)

- **Engineering**

Engineering support at the Station warrants improvement in part because the quality of the Engineering product is an important contributor to the need for improved Station performance. The Department's role has not been clearly understood at the Station and, in some cases, between different Engineering groups. The Engineering staff's resources have been diverted to non-traditional Engineering functions to support day-to-day operations (e.g., supervising Maintenance activities, procedure writing, and other administrative activities). System Engineers have been characterized as having relatively low levels of experience and, as a result, lack credibility with Operations and Maintenance personnel. A high Engineering work load complicated the effective prioritization of Engineering activities and also resulted in Engineering's focus on short-term solutions to recurrent equipment problems. Additionally, Engineering did not focus on the development of technical capability including root cause determination and self-assessment, which in turn undermined its credibility with the Operations and Maintenance Staff.

Engineering Administrative Procedures will be reviewed and modified, as necessary, to clearly define the organization's roles and interfaces with other Station Departments. System Engineering has completed a job task analysis to ensure that only critical work activities are retained in their Department charter. Engineering will provide professional and technical development to increase the knowledge and qualifications of System Engineers and thereby increase their level of credibility at the Station. This effort will include formal Senior Reactor Operator (SRO) training, rotational assignments, and closer collaboration with experienced Architect Engineering personnel. An integrated work management system will be used by Engineering personnel to ensure that both short- and long-term projects receive appropriate attention. (See Section II.7)

- **Operations**

Performance has declined in the areas of standards, rules and procedures, human performance, and training. Specifically, Station Management's failure to consistently maintain and communicate high standards for Operations was reflected in issues regarding the acceptance of degraded conditions, frequent workarounds, and slow response to annunciators. Some radiation work rules were not consistently emphasized by Operations management creating a perception within Operations that strict compliance was not required if production was going to be impacted. Lengthy and complicated procedures have lead to Operator confusion and corresponding non-compliance. Shift Supervisors have been burdened with numerous administrative responsibilities that limited the time available to personally direct plant activities. Operations Management did not always ensure that simulator training satisfied their expectations in testing crews' abilities to respond to transients outside of Emergency Operating Procedures (EOPs).

Operations will take the following actions to establish higher standards: the Operations Manager and the Technical Support Superintendent periodically will identify and review workarounds; and Temporary System Changes will be reviewed to ensure that their cumulative effect will not adversely impact the safe and reliable operation of the Units. Senior Operations Management has communicated the message that strict procedure adherence is required and will be monitored and documented during Operating evolutions. The Operations Manager has conducted crew meetings to ensure personnel understand the importance and responsibility to comply with radiation rules and standards. The Operations Manager will establish a multi-year program to improve the quality of Operating procedures. The STAR (Stop, Think, Act, Review) self-check program will be continually reinforced by all Operating Supervisors. Operating Management will develop, with the Training Department, more realistic scenario drills. A licensed training instructor will be assigned to each crew to spend time on shift identifying any skills weaknesses or training opportunities. (See Section II.8)

SECTION I

INTRODUCTION

INTRODUCTION

I.A Background

Throughout 1992 and continuing into 1993, LaSalle Station experienced a decline in performance. Both SALP and INPO ratings declined and the incidence of escalated enforcement action increased. Among the factors contributing to these declining trends were turnover in key Station management positions (including that of the Station Manager), degraded materiel condition of plant equipment, radiation protection issues, and problem recognition. A detailed discussion of how these factors evolved and adversely impacted Station performance is set forth below.

I.B The Business Unit Plan (BUP)

I.B.1 Business Development Team Assessment

In the Summer of 1993, the LaSalle Site Vice President concluded that several areas of Station performance were not functioning at the high levels of safety, dependability, and efficiency representative of the best performers in the nuclear industry. In addition, a review of performance issues at Zion, Dresden, and Quad Cities Stations, as well as the findings of INPO evaluations and NRC SALP performance, indicated a pattern of performance deficiencies at LaSalle Station. In September, the Site Vice President commissioned a comprehensive self-assessment activity, modeled on the NRC Diagnostic Evaluation process, to be performed by the LaSalle Business Development Team (LBDT). The Team's objectives included assessing:

- safety performance in the functional areas of Operations, Maintenance, and Engineering;
- the effectiveness of the Site and Corporate Quality Verification (QV) oversight function;
- the quality and effectiveness of administration and control processes;
- the effectiveness of management controls and practices; and
- the apparent contributing causes of identified problems.

The LBDT assessment, scheduled for an eleven week duration commencing on October 4, 1993, was structured in three phases: preparation, performance, and documentation. Within these phases were periods of personnel selection, team and investigative training, assessment performance and report writing training. In an effort to establish Station ownership and involvement, the selection of Team participants was focused toward obtaining Station personnel from both management and bargaining unit. In order to benefit from lessons learned at Quad Cities concerning how to effectively conduct a BDT assessment (e.g., questioning techniques, feedback mechanisms, and scope) and in an effort to bring a new perspective to the Station team, members were brought in from the Corporate, Dresden Station, Quad Cities BDT members, Braidwood Station, and external consultants.

The LBDT Assessment report was published in late November 1993. The report, identified performance issues which required corrective actions. The following findings were identified:

- Failure to provide clear and understandable standards and expectations to Station personnel.

- Station personnel were not held accountable for meeting standards and expectations.

- Inadequate attention was paid to the Quality Verification organization's findings.

- Processes for identifying, integrating, and prioritizing work were ineffective.

- Low levels of teamwork and understanding that Station improvements were the responsibility of both management and Bargaining Unit personnel.

- The need for improvement in program implementation, including follow-up on corrective actions and deployment of a self-assessment process.

I.B.2 Integration of the BUP and the BDT Corrective Actions

In early January 1994, a team of Station managers, staff, and Bargaining Unit personnel were assembled in a concentrated effort to review the LBDT Assessment Report and to identify immediate, near-term, and long-term corrective actions. The BDT Corrective Action Teams constructed action plans to address each LBDT Assessment finding.

Concurrently, LaSalle was developing a Station-specific Business Unit Plan (BUP). The LaSalle BUP was organized into strategies, including objectives and goals to achieve the strategies, emphasizing the application of the corporate vision and values and LaSalle Station site-specific strategies. The latter were used to categorize or group issues add corrective actions. The following BUP overview topic areas capture the scope of issues set forth in the station's categories:

- Management and Leadership
- Radiation Protection
- Material Condition
- Issues Management
- Workforce Management
- Maintenance
- Engineering
- Operations

Finalization of the LBDT corrective action plans occurred nearly simultaneously with the scheduled need to identify actions necessary to support the BUP strategies. The Site Vice President determined that in order to focus the site and avoid competition for the same resources among separate plans, the LBDT was to be integrated into the BUP, thereby providing the Site with one master document to establish priorities, promulgate policy, and manage resources (See Figure 1). Integration of the two programs was completed in early February 1994. This involved the evaluation and categorization of each LBDT action item under one of the BUP strategies.

The BUP action plans include ownership assignments, scheduled commitment dates, and measurement standards. An integral part of the process involves confirmation that adequate budgeted resources are available to perform the specified actions, and that the proposed schedule is realistic and reflects the appropriate priority.

(Insert Figure 1 Graphic here)

I.B.3 Management Oversight and Administration of the BUP

Each BUP strategy is managed by a member of Station senior management. Placing the actions under the nine BUP strategies emphasizes the responsibilities of all Station line management to effectively implement the corrective measures. Oversight and follow-up on the achievement of BUP results will be ensured and facilitated through an oversight structure that includes the Site Vice President, the BUP Manager, and an independent BUP Oversight Steering Committee.

The Site Vice President has created a dedicated BUP group, staffed with seasoned managers and experienced technical experts. The BUP group will serve as a resource to assist line management implement the BUP objectives.

A BUP Steering Committee comprised of CECo executives and managers, as well as industry technical experts will provide strategic focus and review for the BUP implementation. They will also provide guidance on BUP direction and focus for subsequent years.

An independent team of individuals from outside CECo who have extensive management and nuclear power technical expertise, will provide oversite and guidance for further enhancement of detailed business unit plan actions.

I.C <u>The BUP: Long Range Planning Tool</u>

The BUP is a multi-year planning tool that will be revised annually. Certain parts of the BUP, such as the performance indicators and the action plans, will be revised and updated more frequently. The BUP is an effective tool that will be used to address declining performance trends and implement necessary improvement actions at the Station.

Station management regards 1994 as a period of transition to a BUP-directed work program and has established the following milestones in its improvement efforts:

- During the summer of 1994, the Corrective Action Teams will reconvene to assess the implementation of the action plans they developed approximately six months earlier. Their continued involvement is expected to contribute to a continued sense of involvement and ownership among all Site groups.

- During the 1995 budget preparation and approval process, tentatively scheduled for completion during the fourth quarter 1994, Station management will verify adequate dedicated resources for completion of proposed actions scheduled during 1995.

- During the fourth quarter of 1994, updated BUP strategies supported by finalized, resource-loaded action plans will be published to guide station priorities and policies through 1995.

- Preliminary plans for 1996 also will be developed during the budget review process.

Throughout the 1994 transition period, the existing action plans will be implemented on schedule, in parallel with activities associated with the transition. The BUP will continue as the single strategic planning vehicle for LaSalle.

I.D Immediate Improvement Initiatives

In order to take immediate steps to address LBDT and BUP issues, LaSalle has undertaken the following actions:

Management additions: LaSalle has filled eleven of the fifteen senior manager positions with experienced personnel from outside LaSalle Station since January 1993. For instance: In January 1994, Don Ray was assigned as Station Manager and, May 1994 Jim Abel was assigned as Site Engineering and Construction Manager. Mr. Ray came from outside of CECo and brings significant technical and management expertise to the Station. Mr. Abel is a highly qualified CECo Engineering manager with multiple BWR assignments dating back to Dresden 1. (See Section II.1, "Management and Leadership")

Integrated BWR Improvement Strategy:

In addition to the BUP, CECo has implemented an Integrated BWR Strategy which defines an improvement strategy for the immediate, mid-term, and long-term time frames. The immediate strategy focuses upon the current problems associated with declining performance at the BWRs.

- material condition deficiencies;
- radiation protection issues;
- problem identification weaknesses; and
- human performance deficiencies.

CECo has established targets to measure the results of the immediate strategy initiatives and ensure there is an adequate rate of performance improvement and reversal of adverse trends. These targets consist of a series of objective measurement standards.

Mid Term Phase (1 to 3 years)

The mid-term strategy will ensure that Site management will complete actions necessary to address the root causes of declining performance. This will be facilitated by resolving the issues identified in the Business Unit Plan overview.

Long Term Phase (3 to 5 years)

The long-term strategy focuses on the attainment of a high level of performance consistent with the business plan. LaSalle Station will strive to raise performance levels to "World Class," be a "Competitive" generation facility, and function as a "Nuclear Generating Team".

Accomplishments to Date: See Attachment 1, which describes the initial steps that have been taken to effect immediate and near-term improvement in the Station's performance. Improvements to date include, but are not limited to, changes in management assignments, radiation protection, and material condition.

SECTION II

MAJOR FOCUS AREAS

SECTION II

Major Focus Areas

1. Management and Leadership

1.A. Issues

Management and leadership issues have significantly contributed to declining performance at LaSalle Station. Increased management emphasis on providing appropriate levels of involvement and direction are needed from LaSalle's Leadership team. In the past, direction provided to Station personnel over-emphasized the importance of achieving short-term production goals at the cost of accepting temporary fixes without a commensurate focus on long-term issue resolution. In addition, management did not fully appreciate how this approach was received and interpreted by the Station personnel (i.e.,) as shown by poor work practices, a tolerance of low performance standards, and acceptance of long-standing problems).

The direction and focus both communicated and practiced by Station management resulted in "crisis management" that placed managers in a reactive mode. The demands placed on management to address immediate concerns diluted their effectiveness in communicating clear expectations, setting appropriate standards, modeling appropriate leadership behaviors, and attaining a high level of accountability in the workforce for achieving effective corrective actions. Further, inconsistent application of disciplinary policies and an unclear emphasis on personal accountability has contributed to the observed incomplete adherence to Station policies, procedural requirements, and radiation protection guidelines.

In addition to the general leadership issues discussed above, the Station Manager position was filled by five different individuals over a thirteen month period. These personnel changes created discontinuity in a key leadership role in the organization. Declining performance trends were not effectively identified and reversed during this period of change. This situation highlighted weaknesses in the Station's succession planning processes, as well as over-reliance on a single position for decision making and direction.

Specific management and leadership issues are described below:

- Management did not sufficiently emphasize the importance of developing a clear understanding of potential organizational and individual weaknesses and thereby was unable to ensure the implementation of timely improvement efforts. Examples of this include the ineffective development of management talent capable of assuming new roles in the organization, as well as poor teamwork and communication between the Radiation Protection and the Maintenance Departments, which resulted in misunderstanding of appropriate radworker practices.

- Corporate succession planning resulted in an insufficient pool of qualified candidates to assume the Station Manager position.

- Senior management's over-involvement in day-to-day details and reactive approach resulted in: (1) a decreased emphasis on long-term direction and improvement; and (2) a reduction in the level of first line supervisors' ownership and accountability for decision making and problem solving.

- Management's involvement in day-to-day details also distracted its focus away from effectively monitoring overall Station performance, assessing results, and identifying needed improvements prior to overall plant performance declines.

- Management projected a perception to Station personnel that immediate fixes and adherence to schedules were more important than long-term corrective actions that identified and permanently addressed the cause of problems.

- Management did not establish or effectively communicate standards and expectations on a consistent basis. For example, direction was given to supervisory personnel to spend 20% of their time in the plant. Expectations regarding what was to be accomplished by the increased field presence, however, were neither explicitly defined nor communicated.

- Senior management has not responded effectively to input from Station workers or provided effective feedback to them. This has resulted in a reluctance to provide recommendations for procedure and process improvements at the Station.

- Senior management has not clarified formal roles and responsibilities to a level that ensures organizations and individuals fully understand their responsibilities, authority, accountability, and primary interfaces.

1.B. Objectives

Objective 1.B.1: Strengthen the Leadership Team and Structure

1.B.1.a LaSalle management has reinforced the leadership team's key positions with personnel who have successfully demonstrated their technical and leadership abilities elsewhere in the industry or within Commonwealth Edison. The personnel selected to fill the following positions have been judged by the Site Vice President and Chief Nuclear Officer to be people who have the skills and experience necessary to successfully implement and achieve performance improvements at the Station:

New Management and Supervisory personnel, many who bring experience from outside of the Station, have been assigned to the following positions:

- Station Manager;
- Site Engineering and Construction Manager;
- Operations Manager;
- Business Unit Plan Manager;
- Technical Services Superintendent;
- Maintenance Superintendent;
- Executive Assistant to the Site Vice President;
- Self-Assessment Director;
- Chemistry Supervisor; and
- System Engineering Supervisor.

1.B.1.b In addition to the leadership team changes described above, the Site Vice President has created a dedicated Business Unit Plan (BUP) group. It is staffed with seasoned managers and experienced technical experts. The group will serve as a resource to assist line management implement BUP objectives.

Objective 1.B.2: Improve Leadership Behaviors

1.B.2.a LaSalle Station leadership will create coaching opportunities to reinforce strong leadership behaviors across all levels of the organization.

- By improving leadership behaviors through mentoring, management will demonstrate to Station personnel the expectations and standards it expects them to adopt. This will reinforce and foster a culture that is characterized by teamwork, initiative, and a willingness to identify problems and implement improvements.

  For example, in a mentoring relationship, managers can clearly communicate performance expectations, demonstrate personnel performance standards, and reinforce such standards in daily work activities.

- Management mentoring also will reinforce the importance of incorporating Site values into management decision making.

1.B.2.b Leadership is being assisted through the assignment of a temporary Radiation Protection (RP) advisor from INPO. By incorporating a heightened level of technical talent into RP management, the department's technical and managerial capabilities are being improved.

Objective 1.B.3: Establish Standards and Expectations

Station management will clearly define standards and expectations that will govern day-to-day activities at LaSalle. Standards will be set consistent with industry best practices. Moreover, as more fully discussed below in Objective 1.B.5, Station personnel must be held accountable for achieving results that reflect management standards and expectations in their work practices and behavior. The following actions have been taken to define the standards of performance and management expectations at LaSalle Station:

1.B.3.a LaSalle management has defined and published its 1994 Major Station Goals. These goals set targets for unit and safety system performance, as well as personnel safety and radiation exposure.

1.B.3.b A consolidated priority list of Station issues is being developed to provide clear guidance for Station activities (see Section II.4, "Issues Management"). Individual managers will be assigned and held accountable for bringing these issues to resolution.

1.B.3.c The importance of critical independent assessments, quality overviews, and greater participation in corrective action programs will be communicated as an expectation for all employees.

1.B.3.d Roles and responsibilities are being developed and communicated to workers to provide a clear definition of functional expectations that support the Station's goals.

- Roles and responsibilities will be defined by each work group and reflected in LaSalle Administrative Procedures.
- Managers will be held accountable for their department's implementation of assigned functions.

Objective 1.B.4: Communicate Expectations

Clearly defined standards and expectations will be communicated to Station personnel. LaSalle management has taken the following actions to accomplish this objective:

1.B.4.a Expectation seminars for all Station personnel are being conducted at LaSalle. In these seminars, management expectations, covering a range of topics, including radiation worker performance and procedure adherence, are discussed with groups of approximately 20 individuals.

- Expectations for adherence to station procedures, following radiation protection guidelines, and exercising personal responsibility for keeping one's total effective dose equivalent to a minimum will be written and communicated to all Site employees.

1.B.4.b A station-wide communication plan will be developed and used as a model for the development of department-specific communication plans. This will include readily accessible sources of information, a communications assessment process, and communication vehicles tailored to effectively relay specific types of information.

1.B.4.c Weekly communication meetings provide a forum for discussion of current Station issues. Senior Managers rotate through all departments on a weekly basis to personally convey a common message to Station personnel, previously agreed upon by the Senior Management Team, and to discuss their individual activities.

1.B.4.d The Station Manager conducts the Daily Event Screening Meetings and uses this forum to communicate standards and expectations regarding identified issues.

Objective 1.B.5: Enforce Accountability

Station personnel will be held accountable for the effective implementation and achievement of the standards and expectations established by Station management. LaSalle management has taken the following actions:

1.B.5.a The Performance Planning and Review Process (PPR) has been revised to link 50% of each individual's performance rating to achievement and implementation of the 1994 Major Station Goals which include the elements of the BUP program. This change is expected to enhance teamwork and accountability among our employees.

1.B.5.b Improvements will be made in disciplinary processes by strengthening the content and implementation of policies and by consistently applying discipline for violations of procedural and administrative guidelines.

Objective 1.B.6: Enhance Management Monitoring and Assessment

Managers and supervisors will be involved in monitoring daily activities within their areas in order to ensure the effective implementation of management standards and expectations. Management presence provides an opportunity to lead by example, coach Station personnel, and reinforce high levels of quality performance and long term improvements. Monitoring and assessment activities at the Station include the following:

1.B.6.a Managers and supervisors will monitor daily activities within their areas of responsibility on a routine basis. This direct involvement will enhance coaching opportunities, reinforce management expectations, and identify areas for improvement in Station performance.

- LaSalle Station has implemented a Senior Manager On-Shift program that schedules senior managers and department heads on a rotating basis. They follow jobs in the field which allows them an opportunity to coach personnel, observe job activities, monitor personnel performance, and provide guidance in management's expectations of Station personnel. Managers observe worker's performance in areas such as radiological work practices, personnel safety, procedural adherence, housekeeping, and work practices. This oversight function will provide Station management with a first-hand idea of the problems encountered by workers in the field, and will allow management to be proactive in the resolution of potential issues.

1.B.6.b A system will be developed and implemented that will provide Bargaining Unit personnel an opportunity to provide input on the performance of their first line supervisors. This information will be evaluated and be used as a basis for future PPR objectives and developmental activities.

1.B.6.c The Integrated Quality Effort (IQE) will be implemented at LaSalle to provide a comprehensive self-assessment process. This process will provide data and trends to Station management on their effectiveness in setting standards, reinforcing performance expectations, and achieving desired results.

2. Radiation Protection

2.A. Issues

The integration of the Radiation Protection (RP) Program into all work group practices requires significant enhancement as evidenced by several events that underscore issues pertaining to LaSalle's RP culture and administration of program requirements. Noteworthy, from a historical perspective, is the fact that the LaSalle RP Department, specifically the RP Technicians, lack credibility with the LaSalle workforce. This is due in large part to past RP management, as demonstrated by:

- its autocratic style and
- the tendency of Senior Station management's production orientation to adversely influence RP practices and procedures.

These factors have inhibited RP Technicians from exercising their stop work authority, have resulted in the transmission of mixed messages to the workers, and have distorted the RP Department's customer service focus. In essence, the Station came to view the RP Department as a barrier to be overcome, instead of a facilitator and necessary part of the work effort.

In addition, Station personnel lack an innate knowledge and awareness of what it means to be a good radiation worker. This is due, in part, to the structure of the Nuclear General Employee Training (NGET) requalification program, which has not lent itself to an RP focus. Individuals have "tested out" without the benefit of formalized training or proficiency testing in RP topics. Basic RP fundamentals, such as the donning and removal of protective clothing and handling of radioactive materials, have not been reinforced through formal training.

Radiation workers are weak in the fundamentals, often are inattentive to detail, show signs of complacency, and at times disregard rules and procedures. In addition, the RP program requires improvement in the areas of Source Term Reduction, radioactive material control, and other programmatic areas outlined below:

- Management and leadership issues, including those listed below, have resulted in declining RP performance at LaSalle Station.
  - Management expectations are not clearly communicated to Station personnel;
  - Performance standards are set too low;

- Supervisors and workers are not held and do not hold themselves accountable for their performance;

- RP/ALARA resource requirements are not effectively integrated into work planning; and

- Implementation of a Source Term Reduction program has lacked focus.

- Many workers do not fully understand or respect the radiological hazard, contributing to poor work practices.

- Radiation workers at times have not adhered to RP procedures. RP procedure adherence is complicated by management expectations governing procedural adherence that have not been clearly articulated and the existence of inappropriately created and structured RP rules.

- Collective radiation exposure at the Station is high. A major contributor to this is the Site's high source term which has not been effectively mitigated through a Source Term Reduction program or the effective use of engineered barriers such as lead shielding.

- Relationships between RP personnel and other departments are weak.

- Relationships between RP Supervisors and bargaining unit personnel have been characterized by a lack of trust.

- Plant processes and controls have not been fully effective in preventing radioactive material from leaving the Radiologically Protected Area (RPA), due in major part to numerous unmonitored egress points.

- Radiological Posting controls have not been fully effective. Examples include incorrect radiation area postings, radiation areas not being properly roped off, and incidents involving unlocked high radiation area doors.

- Radiological survey maps appear cluttered, contain inconsistent presentation styles, and lack information that would allow workers to easily reference specific plant locations. The existing method of updating survey copies posted for worker use is ineffective.

- The ALARA review process is not consistently applied at the Station. The procedure guidance is too broad.

- RP management has not effectively established work prioritization in the Lead Shielding Program, nor has it accepted ownership of the program. For example:

  - RP personnel reissued numerous lead shielding packages to Site Engineering for evaluation but failed to establish priorities for their review

  - RP personnel did not actively track lead shielding requests that they submitted to Site Engineering to ensure timely evaluation.

2.B. Objectives

The Station's workforce must have a fundamental knowledge of good radiation protection work practices in order to foster an excellent radiation worker performance culture. The Station's ALARA and Source Term Reduction programs must be effective and result in above-average performance in controlling radiation exposures. The following objectives will enable LaSalle to achieve these goals:

Objective 2.B.1: Improve Leadership and Management

2.B.1.a The Station Manager has communicated expectations that managers and supervisors will get into the field and personally make certain their people are practicing the fundamentals of safe radiological work performance.

2.B.1.b The Station Manager has directed to all managers and supervisors that the authority and instructions of the RP staff will not be circumvented.

2.B.1.c Additional training has been provided to all radworkers which clearly outlines management expectation that radiation rules will be followed to the letter, that responsible radiation protection practices be adopted, and that issues be identified involving rules and procedures that are contrary to ALARA principles.

- Communication channels are being expanded to make workers knowledgeable about radiation rules, standards, and expectations through weekly communication meetings, daily Plan Of the Day (POD) meetings, and event screening meetings.

2.B.1.d A Senior Manager On-Site Program has been implemented that requires Senior Managers and Department Heads to periodically spend a full shift in the plant in an oversight capacity to: (1) coach workers on job activities; (2) monitor performance; and (3) communicate management expectations.

2.B.1.e To improve RP support relationships, the Department is adopting a "customer" orientation. The Department will fulfill its radiological safety responsiblity in a professional, proactive, facilitatiave manner.

- Short-term actions include meetings and discussions between RP and their customer departments to ensure that needs have been clearly identified.

- In response to workers' concerns, RP personnel have begun wearing purple hard hats when in the plant to increase their visibility and thereby improve their accessibility to personnel in the field.

- Long-term action includes the initiation of team building sessions between RP and work groups.

- RP Department personnel will be provided customer service training. Interpersonal communication skills such as clarification, confirmation and discussion skills, as well as managing differences, are key elements contained in one of the courses being considered at the Station. A second course related to cooperation between groups is also being considered.

2.B.1.f The Station ALARA committee has been restructured (monthly meetings are chaired by the Maintenance Superintendent and include both management and bargaining unit members). The Station ALARA Committee works with Station Departments in ALARA goal setting, monitors progress toward goal achievement, and reviews key jobs from an exposure control perspective.

2.B.1.g An INPO RP Manager will be onsite for four months to provide: (1) input on improving RP culture; and (2) a detailed review of the RP program, procedures, RP survey maps, postings, boundaries, and RP work practices.

2.B.1.h The ALARA dose budgeting process will be implemented at the Station.

- For example, the Site ALARA Committee (SAC) will establish a "Stretch Goal" and action leads for key jobs.

2.B.1.i Teamwork and trust in the RP Department will continue to be re-established through team building sessions between the RPTs and RP management.

2.B.1.j The Station Manager has implemented a policy to ensure accountability for poor radworker performance (personal review of significant radiological incidents and personnel contamination events with the worker, supervisor, and RP Staff).

2.B.1.k LaSalle will implement a Station recognition program for good radiation worker performance.

2.B.1.l The 1994 management personnel Station performance goals are to be included as fifty percent of individual performance ratings. Individuals will be held accountable for Station radiation exposure performance as part of this process.

2.B.1.m Implementation of the Respiratory Protection program was recently addressed during a Radiation Protection Department stand-down.

- Technician concerns, as well as procedure requirements, were addressed and expectations regarding procedural adherence were emphasized.
- Options such as face shields, dust masks, and goggles for facial contamination control are being made available to Station personnel. In addition, for the near term, the Operational Lead Health Physicist is meeting with the Radiological Protection technicians to discuss respiratory and other issues on a daily basis.
- First-line supervisors are being tasked to assume an active role in achieving improved radiation worker performance.

Objective 2.B.2: Worker Knowledge and Accountability

2.B.2.a The emphasis on intra-departmental communications will be increased at the Station.

- RP ALARA supervisors are physically located in key work areas.
- RP Department representatives attend weekly communication sessions with the line organization.
- An RP representative is assigned to the L1R06 "Work Control Center."

2.B.2.b Refresher radiation training modules will be conducted for both contractor and Station personnel to reinforce management's expectations regarding the adherence to radiation procedures and to refresh personnel on proper radworker practices and techniques.

- This training is expected to improve radiation worker awareness and techniques for reducing personal exposure, avoid poor practices, and foster a greater understanding of requirements.
- It will focus on individual accountability for following the rules and applying good ALARA practices.
- Adherence to RP procedures is a condition of employment.

2.B.2.c Station management will define expectations, assess performance, and focus on:

- accountability;
- Senior managers on-shift;
- weekly communications meetings;
- ALARA dose budgeting process;
- significant radiation event review with Station manager/worker;
- contamination event review with Station Manager/worker;
- dose levelization within departments;
- work area cleanliness;
- pre-job briefing improvements;
- post-maintenance review efforts will include radiological issues; and
- Maintenance self-assessment initiatives will contain dose parameters.

2.B.2.d To promote supervisor accountability, monitoring crews at each Radiological Protection Area (RPA) access point have been stationed full time to verify proper dosimetry, monitor material taken into the RPA and to discuss the requirements of their Radiation Work Permit (RWP). Those in violation of rules will not be allowed access to the RPA and their names will be logged, along with their supervisors name, and forwarded to Radiation Protection Management.

Objective 2.B.3: Radiation Protection Program Improvements

2.B.3.a Radioactive material control will be improved at the Station.

- The Radiologically Protected Area (RPA) has been redefined and ingress and egress limited from six to two points during outages and one during periods of contractors.
- The entrance to the RPA has been restructured to better control the flow of personnel entering and exiting the area.
- The Station is pursuing control of the amount of material and tools exiting the RPA by implementing a centralized tool storage facility within the RPA.
- In the meantime, efforts are underway to communicate the importance of reducing the use of unnecessary tools in the RPA.

2.B.3.b Radiological postings at the Station are being improved (e.g. the RPA is being re-surveyed to identify both high and low dose rate areas).

2.B.3.c Control of High Radiation Areas is being improved.

- The Station currently is evaluating options for improved methods of worker access to high radiation areas. Information from other Stations is being acquired to aid in the assessment.
- The number of routine required accesses will be reduced through surveillance frequency reduction and remote monitoring.
- The marking and labelling of high radiation areas will enhance worker knowledge of control requirements. Under consideration are swing gates with audible alarms and enhanced visual aids such as lights or signs with fluorescent colors.

2.B.3.d A thorough review of the entire radiological work planning process is underway. The review includes pre-planning, pre-job briefings, field execution, post-job reviews, lessons learned documentation, and utilization.

2.B.3.e Radiation Protection Technicians (RPTs) and Radiation Protection Shift Supervisor (RPSS) have been trained on the difference between pre-job and ALARA briefs, including the ALARA review process.

2.B.3.f LaSalle will be implementing a new access control system, which will replace the current access tracking system and provide:

- direct communication to radiation workers; and
- the ability to lockout access for key requirements that have not been fulfilled.

2.B.3.g The RP Department is reviewing practices, procedures, and the Radiation Work Permit (RWP) program for improvements to make them simpler and more user friendly while maintaining high standards of performance.

- When the reviews are completed and the changes are made, Station personnel will be trained on the changes and improvements.

- Station annual requalification and NGET training are being revised to include changes to RP rules, policies, and work practices, including the requirement for the demonstration of donning protective clothing).

2.B.3.h Radiological surveys will be improved by:

- improving the timeliness by which changes to posted surveys are made and including a provision for needed survey updates;

- upgrading the standard for radiological survey quality and the survey review process; and

- improving the presentation quality of survey maps.

Objective 2.B.4: Dose Reduction

2.B.4.a. Inventory

2.B.4.a.1 Over a dozen areas of localized elevated dose rates have been reduced during the L1R06 outage. These "hot spots" contribute to plant general access area dose rates and increase worker exposure. The remaining hot spots (there are 235 total) have been identified, prioritized, and plans to eliminate specific spots will continue to be implemented through the remainder of the L1R06 refueling outage and beyond.

2.B.4.a.2 Chemical decontamination of the reactor recirculation system will be performed in L2R06.

2.B.4.a.3 Chemical decontamination of the Residual Heat Removal (RHR) and reactor water cleanup (RWCU) systems currently are being planned for L2R06 and L1R07.

2.B.4.a.4 The need to perform chemical decontamination of primary systems will be evaluated for each outage. Depleted zinc injection will substantially reduce the rate of system recontamination. It is expected that chemical decontamination of the reactor recirculation system, for example, will be performed approximately every seventh refuel cycle after zinc injection is initiated.

2.B.4.a.5 Elimination of the reactor cavity crud trap currently is scheduled for L2RO6 and L1RO7.

2.B.4.a.6 Reactor vessel nozzle flush currently is scheduled for L1R06 and L2R06.

2.B.4.a.7 Guide tube vacuum on removed CRDs is scheduled for L2R06 and L1R07.

2.B.4.a.8 The ECCS injection line will be monitored and flushed to reduce dose rates for scheduled outage work activities. (completed in L1R06, scheduled L2R06)

2.B.4.b. Techniques/Processes

2.B.4.b.1 A comprehensive Lead Shielding program will be established by RP to include replacement of temporary lead shielding with permanent installations where appropriate.

2.B.4.c. Optimized Water Chemistry

2.B.4.c.1 Depleted zinc injection will be implemented to reduce primary system dose rates. Zinc changes the piping corrosion layer and competes with radioactive cobalt in the layer.

- Unit-1 temporary zinc injection skid operational. (complete)
- Install passive zinc injection system on Unit-1.
- Unit-2 temporary zinc injection skid operational.
- Install passive zinc injection system on Unit-2.

2.B.4.c.2 Install enhanced Condensate Polisher resin to reduce iron concentrations in reactor feedwater.

2.B.4.d. Source Term Reduction

2.B.4.d.1 A technical expert has been assigned to be the Source Term Administrator. The Source Term Reduction effort will be focused on removal of materials that, when activated in the reactor core, contribute to station radiation exposure. This effort will:

- define roles and responsibilities of personnel involved in Source Team Reduction efforts.
- communicate Source Term Reduction program requirements to all Station departments; (completed)
- perform an annual assessment of Source Term Reduction program effectiveness;
- replace 15 Control Rod Blades with non-stellite blades during L1R06. (complete) All future blade replacements will be non-stellite; and

- administer the valve replacement program, based upon cobalt release rates. Valves are prioritized into three categories.

  - Priority I valves have been determined to be the principal cobalt contributors. Priority I valves will be replaced with non-stellite components whenever valve maintenance or plant modification warrants. Parts for Priority I valves will either be stocked on the shelf or will be ordered if lead times are sufficiently short.

  - Priority II valves contribute to the plant cobalt concentration to a lesser degree and are not in the main flow of the reactor coolant system. Replacement of these valves is done on a case by case basis and parts are not normally stocked for these valves.

  - Priority III valves are not wetted by the primary coolant system. There are no plans to replace priority III valves with non-stellite components.

2.B.4.e. Technology/Engineering Controls

2.B.4.e.1 The Station will implement improvement initiatives, including the enhanced use of video equipment (video tour computer program) and robotics.

2.B.4.e.2 More extensive use of Engineering controls will be implemented during radiation worker activities.

3. Materiel Condition

3.A. Issues

Equipment performance at LaSalle Station has been declining over the past several years. The decline in materiel condition has placed additional burdens on the Operators, particularly when responding to plant transients. Materiel condition issues can be divided into the following areas:

Materiel Condition Programmatic Deficiencies

- Issues pertaining to the Root Cause Program led to a cycle of recurring equipment problems (see Section II.4, "Issues Management").

- Weaknesses in the knowledge level of the System Engineers contributed to declining materiel condition.

- Processes did not exist to address minor materiel condition and housekeeping deficiencies. As a result, these issues were processed through the Nuclear Work Request (NWR) program. Due to their low priority status, they were not addressed in a timely manner. This situation perpetuated the perception with plant personnel that minor materiel condition issues were "not worth fixing."

- Temporary System Changes (TSCs) were used and workarounds accepted as solutions to equipment performance issues. These solutions were used to avoid the complex and lengthy plant modification process. As a result:

  - There are a large number of long-standing TSCs at the Station (approximately 100 are in place for the facility).

  - Operators frequently work around materiel condition deficiencies (approximately fifty workarounds have been identified to date).

- The Materiel Condition program initiated in 1989 had the following deficiencies:
  - The program dealt with mainly housekeeping issues;
  - The program was not properly focused to ensure sustained improvement; and
  - Standards often did not meet industry expectations.

Resource Utilization

- Coordination and planning difficulties contributed to the continuation of unresolved materiel condition issues; and
- Planning and coordination difficulties also complicated the appropriate allocation of personnel resources to address identified materiel condition issues.

Maintenance Performance Issues

- Maintenance issues have contributed to declining plant materiel condition and equipment unavailability. These include:
  - poor work practices;
  - low standards for the acceptance of completed work;
  - improper use of tools and control of the work area; and
  - the Preventive Maintenance (PM) Program was not designed to achieve specific performance results. Many PM activities were structured without sufficient Engineering involvement.

Equipment Design and Reliability

- The design related issues at LaSalle affect safety related as well as power generation equipment and systems. Reliability of the power block equipment is important to minimize challenges to the plant. Examples of design-related issues include:

  - A reactor water clean-up leak detection system that has spurious trips when the plant is passing through the heatup and cooldown ranges of temperatures.

  - Some combinations of heater drain pump operations cause flow distribution patterns which result in transients of the pump forward system.

3.B Objectives

Objective 3.B.1: Improve Overall Plant Materiel Condition

3.B.1.a A proactive effort is being initiated to identify problems and weaknesses in the overall materiel condition of systems and equipment important to the safe and reliable operation of the LaSalle units, and to determine and implement any required corrective actions.

- The result of this effort will be to provide a high level of assurance of the readiness of these systems and equipment to function when called upon, and not potentially distract and confuse the unit operators during transient events

- This effort will be patterned on the Vulnerability Assessment process previously performed at Quad Cities and Dresden Stations, augmented by selected testing of specific systems and equipment. The scope of the systems and equipment to be included will be determined based on past operating experience combined with the relative importance of the systems and equipment derived from probabilistic risk assessments for LaSalle.

3.B.1.b The Materiel Condition Program will be revised to clearly define each department's role and responsibility for future improvements. The program will include the following:

- The definition of responsibilities to ensure Maintenance, Engineering, and Operations resources will be provided to resolve long-standing equipment problems;

- Routine walkdowns by System Engineers of their respective systems and review the materiel condition.

3.B.1.c A composite maintenance crew, currently referred to as the Corrective Action Team (CAT), will be utilized to address minor maintenance issues and housekeeping activities;

- as a result, minor maintenance repairs will no longer be processed through the Nuclear Work Request Program.

3.B.1.d The Work Request Backlog will be reduced to meet defined targets:

- Plant Management will set annual goals to reduce Work Requests to a defined level; and
- Housekeeping standards will be set to meet or exceed industry standards.

3.B.1.e System Engineers will review the work request backlog on their respective systems to determine the individual and cumulative effect of the backlog on the system.

3.B.1.f System Engineers will develop a program for the periodic review of outstanding work requests including a prioritization system.

3.B.1.g Workarounds will be identified and reviewed by Operations and Engineering to determine which NWRs should be escalated in priority.

3.B.1.h Materiel condition expectations will be emphasized.

- The Station Manager will communicate to his management team the importance of materiel condition corrective actions.
- Department Heads will communicate and follow-up to Station personnel the expectations to identify plant materiel condition deficiencies.

3.B.1.i The station will identify two nuclear power stations outside of CECo that have superior materiel condition programs in order to visit them and bring ideas and information about good practices back to LaSalle's Program.

Objective 3.B.2: Improve Resource Utilization On Materiel Conditions

3.B.2.a Planning and coordination of resource allocation will be improved by:

- Implementation of an Issues Management System (See Section II.4, "Issues Management");

- Full deployment of the Station Integrated Reporting Program (IRP); and
- The development of the Station Technical Issue Priority List.

3.B.2.b Implementation of a central Work Control Center has improved inter-departmental communications and coordination.

3.B.2.c An electronic work tracking system has been implemented for the Station Engineering groups.

3.B.2.d During the Unit 1 Refuel Outage (L1R06), Station Engineering and craft resources were augmented with contracted personnel to focus on materiel condition improvements. The following equipment problems have been addressed:

- Feedwater injection isolation and check valves;
- RHR Heat Exchanger cooling water side baffle plate erosion;
- Motor Operated Valve upgrades, including the RHR system full flow test valve internals redesign;
- Reactor Building Ventilation isolation dampers;
- A large number of Air Operated Valves, and their associated downstream check valves;
- Loop "A" Reactor Recirculation Pump seal temperature and vibration input; and
- ECCS and RCIC testable check valve position indicating linkages and hardware.

Objective 3.B.3: Improve Technical Support

3.B.3.a Clear roles and responsibilities will be established and communicated for Engineering personnel. Departmental interface agreements, manpower reconciliation, and a plan for the use of in-house technical capabilities will be established.

3.B.3.b A Senior System Engineer program will be implemented by the end of 1994. This program will provide experienced System Engineers in all engineering specialty areas.

- Senior System Engineer requirements will include a four year degree, and at least 11 years of technical and job related experience. Successful candidates will be approved by a Corporate System Engineering Review Board.

3.B.3.c A dedicated Root Cause Analysis (RCA) group has been formed to mentor Station Engineers and improve their capability.

- This team will mentor other Station personnel including System Engineers, design engineers, and Maintenance staff members on the appropriate RCA techniques for their scope of work.

- The team will lead special investigations including an analysis of equipment reworked during the Post-Maintenance Verification Process.

- Guidance will be developed and communicated by the RCA Group on the trending to be performed on PIF cause codes and other PIF parameters.

3.B.3.d The RCA Group will semiannually assess the effectiveness of the PIF process, including problem identification, problem investigation, root cause analysis and problem resolution. The group also will provide recommendations to the Station Manager based on the results of its review.

3.B.3.e In order to achieve a higher level of performance and improve equipment reliability, several actions have been initiated:

- More effective utilization of the Station's Architect Engineer (AE) resources are being employed in root cause evaluations and design development.

- Experienced Engineers have been integrated into the Station CECo Engineering groups, which afford the Engineering Department the ability to coach and educate less experienced CECo engineers with respect to design methods.

- CECo engineers assist in increasing the AE's understanding of actual plant operations so that the AE's can better assist in the development and implementation of reliability improvements.

Objective 3.B.4: Reduce the Number of Temporary System Changes

3.B.4.a A Temporary System Change (TSC) Coordinator has been designated who is responsible for achieving the TSC reduction goal.

- Temporary System Changes that are older than one year have been reviewed to determine what actions are required for resolution.

3.B.4.b A Station Engineering Plant Support Department formed, in January 1993, has primary responsibility to perform Exempt Changes which expedites the closure of Temporary System Changes. The addition of this resource has resulted in significant reduction in the TSC backlog since March 1993.

Objective 3.B.5: Improve Maintenance Work Practices

3.B.5.a Management expectations for maintenance quality and efficiency will be established and are more fully described in Section II.8, "Maintenance".

Objective 3.B.6: Improve Equipment Reliability

3.B.6.a In order to achieve a higher level of equipment reliability, the following actions have been taken:

- CECO engineers have been teamed with AE engineers in problem-solving groups. This approach to improve equipment reliability has reduced the time necessary to implement corrective actions.

- The Engineering Department will resolve approximately 50 specific materiel condition issues affected by equipment design that were identified through the Station's BDT evaluation. Examples include:

  - RMCS tripping on high temperatures.
  - RPS MG set tripping problem during initial startup.

4.0 Issues Management

4.A Issues

Issues Management broadly encompasses the Station's efforts to more effectively plan and execute work activities. The subset of these issues pertinent to the decline in Station performance includes Problem Identification and Resolution, Self-Assessment, and Quality Verification. Specifically:

- Station personnel did not consistently focus on corrective action follow-up and tracking due to management's emphasis on plant production.
  - Because management was not aware that its over-emphasis on production was leading to this result, corrective actions were short-term, rather then long-term in nature. For example, work-arounds, which demonstrated the Station's reluctance to formulate long term resolutions and implement them in a timely manner, became a normal way of doing business.
  - Similarly, Root Cause Analyses (RCA) were not uniformly perceived as being valuable tools or an effective way to use Station resources.
- The initial introduction of the Integrated Reporting Program (IRP) was limited to Department Heads, Operations personnel, and Radiation Protection (RP) Managements -- with the expectation that they would train their staffs. It is not clear that subsequent training was completed, thus diminishing the effectiveness of problem identification efforts at the Station.
  - In the absence of an integrated Station program for problem identification, numerous and uncoordinated Department-level processes were developed.
  - Some Station personnel lack confidence in the effectiveness of the problem resolution system and, therefore, do not always use it to report problems.

- RCA at the Site was not consistently performed by technical staff in an effective manner due to the perceived pressure to complete a large volume of unprioritized work assignments.

  - The resulting corrective actions did not always prevent problem recurrence (e.g., Reactor Building Ventilation (VR) dampers, Reactor Core Isolation Cooling).

- There is no formal system to trend and analyze equipment, personnel and performance problems in order to prevent recurrence or to perform effectiveness reviews of corrective actions.

- The Station's systems for monitoring corrective actions do not provide a sufficient mechanism to elevate the priority of overdue commitments.

  - The monitoring system (Nuclear Tracking System (NTS)) is not simplistic enough for general Station use. Therefore, Station personnel rely on the Regulatory Assurance staff to keep them informed on the status of their commitments. This results in untimely completion of corrective actions and frequent due date extensions.

- Deficiencies that were identified by Quality Verification (QV) were not treated as significant. Station personnel equated the importance of responding to certain issues to their source (i.e., NRC as being the most important, followed in order by INPO, Station-initiated concerns, QV, and internal self-assessments).

- When Station management failed to respond to QV issues, QV did not aggressively pursue its alternate route (i.e., through Corporate QV) to inform upper management of such issues and seek resolution.

- In the past, Corporate performance assessment organizations fulfilled the primary self-assessment role at the Station. During recent reorganizations, these Corporate groups were eliminated. The Station failed to incorporate an effective self-assessment function prior to the elimination of this group.

4.B. Objectives

Objective 4.B.1: Improve Issue Prioritization and Resource Allocation Processes

4.B.1.a An Event Screening Committee (ESC) has been formed and is chaired by the Station Manager. The committee reviews all new Problem Identification Forms (PIFs), as described below.

- A business decision process working group has been established to review the decision process. Concepts being considered include:

  - A Technical Review Committee (TRC) will be developed to review all emerging technical issues and industry technical commitments. TRC responsibilities will include review of proposed solutions to significant technical issues and the prioritization of the items reviewed.

  - A Business Review Committee (BRC) will be developed. Chaired by the Long Range Work Control Superintendent, the BRC will include the Site Vice President, Station Manager, Site Engineering and Construction Manager, and BUP Manager..

  - The BRC will develop and approve long-range plan recommendations (3-5 years) to assist in and facilitate the implementation of long-term fixes.

  - The BRC will endorse and require that all significant Station issues be prioritized using a single system. This system will evaluate an issue's significance on several bases, including nuclear and personnel safety.

4.B.1.b Existing processes that critically examine and respond to emerging issues will be reviewed to determine their applicability at LaSalle.

Objective 4.B.2: Improve the Awareness and Utilization of the IRP Process For Problem Identification

4.B.2.a The Problem Identification Form (PIF) and instructions have been simplified to eliminate unnecessary administrative information and to foster and facilitate greater use of PIFs by all Station personnel.

- Station personnel have been informed about the use of PIFs, including threshold guidance and its relation to other reporting requirements, through departmental communication meetings.

- The daily PIF submittal rate has approximately doubled since the Fall of 1993. Increased PIF usage will support the early identification and resolution of issues and thereby reduce the probability of significant events.

4.B.2.b An Event Screening Committee has been formed. It is chaired by the Station Manager and includes his direct reports. The Station Manager utilizes these meetings to lead by example and to raise the level of sensitivity in dealing with Station-identified problems.

- The Event Screening Committee determines the need for further review of each PIF. It also assigns each PIF an Integrated Reporting Program (IRP) priority and initial departmental responsibility for PIF resolution.

- Event Screening Committee meetings will be used as an opportunity to coach and reinforce expectations regarding problem identification, as well as help develop an appropriately low threshold level for problem identification.

4.B.2.c A mechanism will be developed to Conduct effectiveness reviews of the problem identification process at least semi-annually. A report will be sent to the Station Manager providing recommendations on program enhancement in connection with such reviews.

Objective 4.B.3: Improve Root Cause Analysis and Trending Processes

4.B.3.a A dedicated Root Cause Analysis (RCA) group has been formed to augment the Station's capability to provide consistently high quality evaluations. This team will lead all special investigations and mentor other Station personnel, including System Engineers, design engineers, and Maintenance staff members, on appropriate RCA techniques for their scope of work.

- The RCA group will conduct an RCA to determine the cause of equipment rework during the Post-Maintenance Verification and Testing Process.

4.B.3.b Guidance will be developed and communicated by the RCA Group on trending to be performed on PIF cause codes and other PIF parameters.

4.B.3.c The RCA Group will semi-annually assess the effectiveness of the PIF process, including problem identification, problem investigation, root cause analysis, problem resolution, corrective action, and will provide recommendations to the Station Manager.

Objective 4.B.4: Develop And Implement Self-Assessment Processes

4.B.4.a A Self-Assessment Director position has been established and filled at the Station. This is intended to be a temporary position to assist line management develop effective self-assessment techniques and processes in their areas of responsibility.

4.B.4.b The Self-Assessment Director will implement an electronic monitoring tool, the Integrated Quality Effort (IQE) process to support the Station's information requirements regarding performance parameters.

4.B.4.c Monthly IQE meetings, chaired by the Site Vice President, Station Manager, or Area Manager will be conducted for each department. These IQE meetings will be the formal Station process for department level self-assessment. IQE meetings will serve the following purposes:

- to discuss adverse trends and to identify trends before they become significant;

- to discuss corrective action effectiveness and timeliness;
- to identify obstacles that need to be resolved in order to enhance the Station's ability to maintain steady performance and improvements; and
- to promote a self-assessment attitude across the entire Station.

4.B.4.d A Self-Assessment training module will be developed and provided to all Station departments. This module will include techniques and practices that can be used by craft personnel to prevent skill-based errors and incorporate lessons-learned into their knowledge base.

4.B.4.e The QV Department will develop and implement an "Integrated Analysis" process. This process will independently review Station performance information and provide both Corporate and Station management with necessary information on adverse performance trends.

Objective 4.B.5: Define Expectations, Responsibility, and Accountability for Corrective Actions

4.B.5.a Implementation of corrective actions will be aggressively pursued at the Station.

- The Regulatory Assurance Supervisor will discuss the status of all overdue corrective action items weekly with Site Managers and/or direct reports.
- Overdue action items are being discussed by the Station Manager, Site Engineering and Construction (SEC) Manager, and Services Director with their direct reports on a periodic basis, since mid-February 1994.

4.B.5.b Training aids will be developed by Regulatory Assurance and provided to each Department regarding the use of the Nuclear Tracking System (NTS) and the Action Item Request (AIR) process in order to increase their usefulness to a wider group of Station personnel.

4.B.5.c Procedure LAP-1500-4 will be revised to emphasize ownership of assigned corrective actions and accountability for meetingscheduled deadlines.

4.B.5.d A mechanism will be developed by the Regulatory Assurance staff to assess management effectiveness in following-up on corrective actions. This mechanism will include an evaluation of both aging commitments, as well as the number of times Corrective Action due dates are postponed.

4.B.5.e The Site Vice President and Station Manager will jointly set formal expectations for all of their direct reports regarding the timeliness of corrective actions.

4.B.5.f The QV Department will establish guidelines and communicate expectations regarding when and how to escalate findings that are not being addressed with an appropriate level of aggressiveness.

Objective 4.B.6: Improve Station Responsiveness To QV Findings

4.B.6.a The roles and responsibilities of Station organizations for the resolution of QV issues will be defined and communicated by Station management. In early November 1993, QV established its Corrective Action Escalation Policy with Station management. In December 1993, a list of overdue QV issues was provided to Station management and by January 22, 1994, all past due QV issues were resolved or were acceptably on the way to resolution. There has been no recurrence of an overdue QV issue since January 1994.

4.B.6.b QV identified issues will be incorporated into the Station's issues identification, evaluation, and tracking system (Integrated Reporting Program) to ensure that QV issues are adequately defined, reviewed, evaluated, prioritized, corrected, trended, and closed. This will assure QV issues are addressed on an equivalent basis with other Station issues.

4.B.6.c Subsequent to the aforementioned implementation steps, an independent evaluation will be conducted of this process to clearly ascertain the Station's responsiveness to QV issues.

5. Workforce Management

5.A Issues

Workforce Management issues cut across several functional areas. Managers did not consistently establish and communicate their expectations or performance standards. Nor did they hold Station personnel accountable for unsatisfactory performance. This led to confusion in the workforce about what was expected by Station management regarding procedure compliance and procedural adequacy. Complicating the situation were lengthy procedures, cumbersome procedure change processes, and poor work practices. Specific issues include the following:

- Workers have a diminished sense of ownership in procedures. Although workable, procedures are complex and cumbersome, and viewed as being dictates that were not formulated with regard to worker input or suggestions for improvement.

- In some cases, there existed the belief that it was more important to complete the job, rather than adhere to procedures. This was due to the perception that success was measured strictly in terms of job completion. Workers became frustrated with complex, cumbersome procedures, did not make procedure improvement one of their priorities and at times completed their assigned tasks without regard to strict procedural adherence.

- Improvement in the quality of procedures is necessary in order to make them less cumbersome (i.e., procedures, including their "Limitations and Actions" and "Precautions," often are too lengthy and laden with confusing and complicating layers of detail) in order to allow for user friendliness.

- Procedure change processes need to be improved to make them more timely and to provide feedback mechanism to personnel who request procedure changes (i.e., explain whether the requested change has been made and, if not, why).

- In some cases, the First Line Supervisors (FLS) are uncomfortable holding Station personnel accountable and are not confident in the methods to do so.

5.B Objectives

Objective 5.B.1: Improve Compliance with Procedures

Procedural compliance is being addressed through reinforcement of management expectations and improved communication on procedural adherence expectations (see Section II.1, Objectives 1.B.2 and 1.B.3), and enforcement of worker accountability for procedure adherence.

5.B.1.a The Site Vice President and Station Manager are holding management and employees accountable for meeting their expectations concerning procedural adherence through communication meetings, letters to personnel, and special supervisor meetings.

- The objective is to clearly convey job performance expectations at LaSalle. Fulfillment of these basic expectations will be trended in general as part of the routine Performance Planning and Review (PPR) process.

5.B.1.b Expectation seminars for all Station personnel are underway at LaSalle. In these seminars, expectations for procedure adherence are presented by either the Site Vice President or the Station Manager to groups of approximately 20 individuals.

5.B.1.c LaSalle Administrative Procedures and plant implementing procedures are being modified to clearly indicate and define procedure adherence requirements.

- The Problem Identification Form (PIF) process will be used to monitor and trend instances of procedural noncompliance at the Station and in individual Departments. These trends will be made available to management and Station personnel as performance indicators that can be used to determine the need for corrective action. Performance indicators will be prominently displayed to emphasize the importance of procedure adherence and reinforce managements's expectations regarding procedure adherence.

- Visits and discussions will be held at other nuclear sites and INPO to determine whether other techniques are available to improve procedure adherence.

Objective 5.B.2: Improve Procedural Adequacy

5.B.2.a Streamlined procedure revision processes will improve the technical quality of procedures and the process for identifying and expeditiously correcting procedure deficiencies. Procedure revision processes will be re-engineered to develop/revise procedures that are technically sound, user friendly, and that add value to the Station. These actions will include:

- Development of a procedure writing process;
- Determination and elimination of each Department's procedure development/revision backlog, and converge Departmental efforts into one central effort;
- A Plant Operating Review Committee (PORC) has been established at LaSalle. The PORC will review items of importance to Nuclear Safety, Temporary System Changes and certain required procedures.
- An annual effectiveness review will be performed on the procedure development/revision process.

5.B.2.b Efforts will be taken to motivate plant personnel to identify deficient procedures.

- Department heads will communicate Station management's expectations regarding personal responsibility to identify and correct inadequate Station procedures.
- The availability of Procedure Deficiency Sheets will be improved (e.g., by mounting bins in locations efficient for the workforce).
- A team will be assigned the responsibility of reviewing the procedure modification process. This review will provide a basis for identifying a process that is less cumbersome and more efficient.
- The procedure writer's guide will be reviewed to further improve the quality of the Station procedures and ensure that human factors considerations are addressed.

- Existing procedures will be reviewed to ensure that they accurately reflect organizational changes.

Objective 5.B.3: Reduce Human Errors

The First Line Supervisor (FLS) plays an important role in reducing personnel errors. Efforts are underway communicate performance expectations to the FLS. Such communication is taking place in the following mediums:

5.B.3.a The Site Vice President is holding special meetings directed at discussing FLS expectations. As part of these discussions, the FLS were encouraged to demonstrate their authority in holding personnel accountable. FLS are encouraged to provide feedback to their staff and an open forum for discussion with employees. The first meeting was held February 18, 1994, the second is scheduled for May 18, 1994.

5.B.3.b The Site Vice President has sent a letter to all management personnel delineating routine job performance expectations. These expectations address personnel safety, procedural adherence, radiation worker practices, openness to QV and outside organizations, and emphasize the importance of including these issues in pre- and post-job briefings.

5.B.3.c A Supervisory Development Seminar will be developed to provide First Line Supervisors (FLS) with information on the following subjects:

- How to minimize schedule pressures through the use of pre-job planning, clearly communicated priorities, and teamwork;
- How to effectively coach employees;
- Assessing workforce skills, using teams, and partnering inexperienced with experienced personnel;
- How to improve the resources for the workforce, making sure the right information is available when needed and in a format that can be easily used; and
- Evaluation of post-job information to identify improvements in the job process.

6. Maintenance

6.A. Issues

- Work Practices: There are inconsistencies in the application of Maintenance work practices such as foreign material exclusion, control of job sites, and radiological work practices. Management's production-driven, schedule-orientated focus and failure to hold personnel accountable has led to the acceptance of sub-standard work practices and resulted in issues regarding ineffective Maintenance activities at the Station. Examples of work practice issues are listed below:

  - Poor radworker practices have contributed to high person-Rem exposure and frequent personnel contaminations;

  - Component covers and manways often are found to be removed when no work is in progress;

  - Job sites at times are not roped off nor is housekeeping always performed after job completion;

  - Parts are not always bagged or tagged during disassembly of equipment; and

  - Training frequently is unresponsive to worker needs in that it often provides lectures as opposed to hands-on, practical application exercises. In addition, training at the Station at times does not focus on refreshing fundamental work practices, as opposed to honing advanced skills. Although training issues previously have been identified they continue to arise at the Station. For example,

    - an electrician was injured while attempting to install a breaker backwards;

    - a review of condensate/condensate booster pump seal performance indicated that seals were being installed improperly, possibly due to worker lack of knowledge; and

    - although routinely required to perform activities in contaminated, high dose areas, practical training on the proper use of anti-contamination clothing and working in a high radiation field has not been conducted in several years.

- Work Request Backlog: Equipment important to the safe operation of the plant is considered to be operable. However, there is a large number of longstanding degraded equipment conditions at the Station that contributes to the work request backlog.

- Facility Maintenance and Housekeeping: A separate process does not exist to prioritize, plan, and schedule actions to address facility maintenance and housekeeping deficiencies. As a result, such issues are funneled into the Nuclear Work Request (NWR) program where due to their low priority status, they are not immediately addressed and contribute to the backlog of work requests.

- Work Control: Weaknesses exist in the work control process. Multiple directions specified for work package preparation and control have led to cumbersome and complex work packages and work instructions that lack appropriate detail. These factors have contributed to job delays and inconsistent Maintenance practices.

- The Preventive Maintenance (PM) Program was not designed to achieve specific performance results. Most PM activities consist of Maintenance personnel's interpretation of vendor information with limited Engineering function involvement.

- Vendor Manuals for non-safety related equipment are not included in the Vendor Equipment Technical Information Program (VETIP) as controlled documents. This results in the inclusion of uncontrolled vendor information in work packages that may not reflect the most accurate information.

6.B. Objectives

Objective 6.B.1: Improve Materiel Condition of Equipment

In addition to the actions specified in Section II.3, "Materiel Condition", the Maintenance Department will undertake the following actions to improve the materiel condition of Station equipment:

6.B.1.a The work request backlog will be screened to:

- ensure that items relating to facility maintenance and housekeeping are not included in the backlog, but rather are addressed by the Corrective Action Team (CAT) described below;
- eliminate duplicative and invalid work requests; and
- support Operations, System Engineering, and Work Control in the proper prioritization of backlog items.

6.B.1.b The Minor Maintenance Program will be reviewed and revised to allow certain corrective and preventive maintenance activities to be more easily performed using the Nuclear Work Request program.

6.b.1.c A composite maintenance crew referred to as the Corrective Action Team (CAT) is being utilized to address facility maintenance and housekeeping issues. The CAT will be expanded to include all disciplines necessary to address the gamut of facility maintenance and housekeeping activities. As a result, such activities will no longer be funneled into the Nuclear Work Request (NWR) program. This will allow the Maintenance departments to focus more closely on equipment and corrective Maintenance activities.

During January 1994, LaSalle Station personnel conducted a nine day planned maintenance outage (L1M05) on Unit 1 to replace the reactor recirculation pump seals. Also, during January 1994, Station personnel performed a seven day planned maintenance outage (L2M09) on Unit 2 to repair Main Steam Isolation Valves (MSIV) limit switches. During February 1994, Station management decided to not restart Unit 1 following a forced maintenance outage (L1F24) prior to the scheduled refuel outage.

Objective 6.B.2: Improve Work Control

6.B.2.a LaSalle Station implemented an interim Work Control Center (WCC) at the start of L1R06. This central work control location and organization has improved inter-departmental communication, coordination, and efficiency.

6.B.2.b The WCC concept will be retained and expanded after L1R06 as a normal business control mechanism. This will include participation from all Station work groups.

Objective 6.B.3: Implement the Maintenance Strategy

6.B.3.a Improvements in the reliability of Station equipment, as well as improvements in efficiency and productivity, will be realized through the implementation of the Commonwealth Edison Maintenance Strategy for improved Performance. The Maintenance Strategy is founded on a philosophy of optimizing safety, generation, and cost as opposed to solely preventing and correcting failures. Implementation of the Maintenance Strategy also will fulfill the requirements of the Maintenance Rule.

6.B.3.b Work Execution is one of the primary building blocks of the Maintenance Strategy. Effective Work Execution consists of the following elements:

- Planning: Determining the resources and coordination required to support work item execution; providing detailed technical direction to the craft; providing sufficient job plans; and producing accurate work item resource estimates to support resource planning and scheduling.

- Scheduling: Coordinating task requirements to optimize equipment access and craft productivity; providing sufficient schedule lead time to facilitate the acquisition and delivery of task requirements; and ensuring that the proper work is scheduled at the proper time.

- Execution: Maximizing the amount of work accomplished with available resources; performing quality work; executing work as scheduled; and providing the System Owner with meaningful feedback and an accurate record of the task.

- Close-Out: Ensuring communication between those who perform the work and the system owner; providing an accurate equipment history; ensuring that appropriate information sources and data bases are updated to reflect the work activity; and evaluating unanticipated work results for changes to the system program work.

Objective 6.B.4: Improve Maintenance Work Instructions

6.B.4.a Improvements in the quality and efficiency of maintenance work packages will contribute to the correction of problems with deficient maintenance work instructions.

- Work packages will be reorganized to provide only the information essential to performing the task so as not to distract Maintenance personnel.

- Work packages will be consistently provided to the Maintenance Supervisor several days prior to their start date to allow time for review and job preparation. This will be aided by the expanded Work Control Center.

6.B.4.b The VETIP coordinator will issue a letter regarding uncontrolled information in the vendor manuals. The VETIP coordinator is evaluating the appropriateness and the actions necessary to update and include non-safety related manuals in the VETIP program.

Objective 6.B.5 Improve Worker Abilities

6.B.5.a Coordination between Training and Maintenance is being improved through better communications and field presence of the instructor.

- Maintenance training effectiveness is being addressed by a series of evaluations and resultant training improvements in the areas of worker task qualification, nuclear station work procedures, troubleshooting, equipment-specific knowledge, codes and standards, and Maintenance composite training.

6.B.5.b Training will be developed to enhance the Maintenance Staff's observation and troubleshooting skills.

6.B.5.c Work Analysts will receive additional nuclear station work procedure training and work package preparation training.

6.B.5.d Training will develop a specific troubleshooting process which incorporates root cause analysis techniques of component and part failures during Maintenance activities.

6.B.5.e The use of practical application exercises will be increased in Station training modules. For example, Instrument Maintenance Technicians now receive training on a mock up of an instrument rack that is simulated as contaminated to more closely resemble actual plant conditions. During the Training, a Radiation Protection Technician is in attendance to facilitate the exercise.

6.B.5.f The annual Nuclear General Employee Training (NGET) has been revised to include donning and removing anti-contamination clothing for appropriate Station personnel. This training also requires performing an activity in a mock-up of a contaminated area and practicing ALARA and contamination control principles.

Objective 6.B.6 Improve Maintenance Work Practices

6.B.6.a Expectations for high standards of Maintenance quality and efficiency will be established and communicated (with clear lines of accountability) by each Maintenance Department manager.

- Expectations that will be established will address communications, work standards and ethics, decision making authority and responsibility, accountability, self-checking, level of involvement in problem resolution, and succession planning.

- These expectations will be communicated through direct, daily contact with Maintenance personnel, individual consultations, periodic "all hands" meetings, daily meetings, and individual performance reviews.

6.B.6.b Pre-job and post-job briefings for mechanics will be fully utilized to reinforce the expectations for high standards with regard to work practices.

6.B.6.c A comprehensive set of performance indicators to measure Maintenance Department performance will be developed and utilized.

7. Engineering

7.A. Issues

Engineering is not fully effective in supporting the achievement of Technical Excellence at LaSalle Station. Technical Excellence is a key factor in achieving the NOD vision. At LaSalle Station, there are two Engineering Organizations comprised of the following three Engineering Departments:

- The System Engineering Department, which reports to the Technical Superintendent.
- The Station Support Engineering Department, which reports to the Site Engineering and Construction Manager (SECM).
- The Modification Design Engineering Department, which also reports to the SECM.

The major issues that limit the degree of technical excellence in Engineering are as follows:

- The role of Engineering is to own the plant design and ensure plant operations, maintenance, and modifications are consistent with design. This role has not been understood by all Station Departments, and to a lesser extent, within the Engineering Department itself. Related issues follow:
  - The roles, responsibilities, and interfaces of the Engineering organization are not clearly defined and implemented. Historically, System Engineering resources have been heavily involved in non-traditional Engineering functions required to support the day-to-day operation of the Station (e.g., writing operating procedures, supervising maintenance activities, taking measurements for surveillances). This has reduced the technical focus of System Engineering.
  - To some degree, there exists confusion about the roles, responsibilities, and interfaces between the System Engineering and Station Support Departments. This situation has existed since the engineering reorganization of early 1993 that divided the Technical Staff into these two departments. Procedure revisions to reflect this reorganization have been slow.

- System Engineering's role as the technical manager of the Station's systems was not effectively implemented. The revised role of System Engineering under the newly developed Maintenance Strategy was not accepted by Operations and Maintenance. During this period of transition to System Engineering as Technical Manager, roles responsibilities and interfaces have been further confused.

- Engineering's focus on short-term solutions has contributed to recurrent equipment problems. These problems, in turn, have increased the workload within Engineering and impacted the reliability of equipment.

  - LaSalle Station management over-emphasized the importance of achieving short-term production goals, at the cost of accepting temporary fixes, without a corresponding focus on long-term issue resolution.

  - This also is characterized by the large number of observable materiel condition deficiencies. Examples of material condition deficiencies are: the backlog of Temporary System Changes; the large number of work requests awaiting System Engineering action; and Operator workarounds.

- The relatively low experience level of System Engineers, coupled with training weaknesses, has prevented the engineering function from providing consistent support to other Station departments.

  - This contributes to difficulty in convincing Maintenance and Operations to accept Engineering recommendations.

  - To compensate for the low experience levels of System Engineers, System Engineering Management has spent excessive time on technical work. This has resulted in reduced planning and issues management efforts and further contributed to a short-term focus.

- Root cause analyses and resulting corrective actions were often ineffective in resolving recurring equipment problems. Management fostered a culture of providing a short-term solution and return to operation. The lack of an effective Root Cause program perpetuated a cycle of ineffective problem solutions, followed by problem recurrence.

- Lack of an effective system for prioritization of workload further diluted the ability of the Engineering staff to resolve important technical issues. This not only impacts near-term emergent priorities but also affects long-term tracking and planning activities and the implementation of commitments and corrective action resulting from inspections, plant events, and improvement programs.

- Engineering has not implemented an effective work force management process. Traditionally, Engineering has set staffing requirements to allow for a large amount of undefined emergent work and attempted to cope with priorities by working overtime or by relying on the contractors to provide additional Engineering personnel. This practice has resulted in large backlogs, overdue commitments on Nuclear Tracking System (NTS), long hours, and in some cases products that are not technically excellent.

- A limited work history database, coupled with ineffective performance monitoring, have contributed to ineffective Engineering support of Maintenance and Operations activities.

- Engineering did not possess an adequate self-assessment culture, as characterized by the inconsistent use of performance indicators or effectiveness reviews to monitor and systematically improve Engineering practices, processes, and procedures.

7.B. Objectives

The actions to improve the Engineering function at LaSalle Station were developed through a rigorous process of defining the desired end state ("vision"), determining the components ("objectives") of that vision, and specifying the sequential steps necessary to achieve each objective. The following is the vision statement for the three Engineering Departments:

> As technical managers of the plant, Engineering will work to maintain plant performance and safety in full compliance with the design bases. We will have the reputation as a valued team member by providing timely, technically sound and cost effective engineering direction and solutions to other station departments. We will continuously strive to achieve the results that define "World Class."

The eight objectives for Engineering to accomplish it's vision are described below (note that materiel condition issues are addressed in Section II.3, "Materiel Condition"):

Objective 7.B.1: LaSalle Station Engineering Groups Will Perform Mainly Engineering/Technical Support Functions.

7.B.1.a Clear roles, responsibilities and interfaces for Engineering will be developed as follows:

- The role of Engineering will be clearly defined, as it relates to ensuring Operations and Maintenance activities are consistent with the design/licensing basis.
- System Engineering has completed a Job Task Analysis. This information will assist in the development of clear roles, responsibilities, and interfaces for System Engineering.
- This effort also will include the establishment of departmental interface agreements, the controlled transfer of current non-technical responsibilities, the revision of appropriate procedures, and the communication of those roles and responsibilities and training to affected personnel.

7.B.1.b The early 1993 Engineering reorganization is not completely reflected in various procedures. Engineering is systematically reviewing all Corporate and LaSalle-specific Engineering, Administrative, and Construction procedures.

- LaSalle is actively participating in a Nuclear Operations Division (NOD) joint program to revise the Corporate Engineering Procedures.
- This joint program will maintain consistency between all six Nuclear Stations and will realize efficiency gains by pooling resources.
- LaSalle-specific procedures are being prioritized to control the review and revisions necessary to reflect the organizational changes.

Objective 7.B.2: LaSalle Station Maintains a Technically Competent, Highly Motivated and Experienced Engineering Staff

7.B.2.a Engineering will provide professional/technical development to attain skills that will lead to qualifications for higher level positions within the Engineering Department and greater experience levels overall. Examples include:

- System Engineering has developed a Senior Reactor Operator (SRO) Rotation Initiative through which System Engineers will be selected to complete formal SRO Training and required to obtain their license. These engineers will then serve approximately 2-3 years in Operations prior to returning to System Engineering. The first three System Engineers have been selected and will be scheduled for this program later in 1994.

- A Rotational Development (Exchange) Program is being finalized between System Engineering and other LaSalle Station Departments.

- The Group Leads, together with some engineers in System Engineering, recently have completed a six week Certification Training course in the various Systems.

- System Engineering Group Leads have attended the Management Development Training Course at the Commonwealth Edison Leadership Development Center (LDC).

7.B.2.b In Fall 1994, INPO will review LaSalle's training program for accreditation renewal. Engineering is working with the balance of the Station to complete a review of the current training program in order to identify and to implement any necessary improvements.

7.B.2.c A reward/recognition system will be developed for proactively improving Station performance.

Objective 7.B.3: Implement An Effective Root Cause and Corrective Action Program

7.B.3.a The Integrated Reporting Process (IRP) was initiated about a year ago as a Station-wide integrated problem identification and action tracking process. The IRP has an effective screening process for identifying the level of necessary root cause and corrective action evaluations (see Section 4.B.2 for additional details). Since the beginning of 1994, management has placed increased emphasis on the utilization of the IRP. There has been a significant increase in both the number of Problem Identification Forms (PIFs) written and the quality of the issues identified.

7.B.3.b A dedicated Root Cause group was formed in February 1994, and is located in the System Engineering Department. The group charter is to perform and promote quality root cause evaluations of high significance issues (equipment problems and performance issues).

- After consultation with root cause specialists from Failure Prevention International (FPI), the LaSalle group was formed.

- The benefits of detailed root cause capabilities are expected to diffuse outward to other Station personnel as the group accomplishes successful root cause determination efforts. Capabilities which are expected to be disseminated include high standards for observation of initial conditions, root cause processes, and specific technical knowledge such as the appearance of materials after certain failure modes are experienced.

- Recent root cause investigations (with FPI assistance) include the Reactor Recirculation pumps, Reactor Recirculation (RR) piping snubber evaluations, and the Reactor Core Isolation Cooling turbine.

Objective 7.B.4: Integrated Work Management System For Engineering

7.B.4.a A computerized Engineering Assignment Tracking system has been implemented, during 1993 and early 1994, for both the Station Support and the System Engineering Departments. This database contains issues assigned to engineers with vital information such as priorities, due dates, and periodic updates. This system provides the ability to track the status of issues and document activities. It also has improved the management of Engineering resources and led to quality documentation of issues, resource allocation, and results.

7.B.4.b The next phase is to upgrade the Assignment Tracking System to provide a direct link to the Station work planning system. This will include standard fragnets for generic and/or recurring activities and an activity based accounting system to provide baselining and feedback for manpower projections for each activity step.

7.B.4.c The Station's prioritization process is being revised to provide a systematic structure including integrated prioritization, long range planning, resource requirements, and scheduling information.

- This process will require that all emerging technical issues and industry/regulatory issues be first addressed by a Technical Review Committee (TRC) that will decide on the appropriate technical solution.

- Next, a Business Review Committee (BRC) will determine the prioritization, resource requirements and the implementation schedule.

- Engineering plays a key role as members in both the TRC and the BRC.

Objective 7.B.5: Engineering Self-Assessment Practices

7.B.5.a The Integrated Quality Effort (IQE) program (see Section II.4, "Issues Management") currently is being implemented at LaSalle. This is a performance indicator program which currently includes 24 direct measurements for the Engineering function and numerous other measurements of plant functions that Engineering impacts. Trending of the indicators will provide source information for self-assessing Engineering processes and practices. The program has the flexibility to be modified to accept specific LaSalle indicators which are currently being developed. A sample of these indicators are as follows:

- Design Change Process - Design Quality
- Design Change Process - Late Adds
- Design Change Process - Schedule Performance
- Engineering Responsiveness
- Number of Temporary Alterations
- Work Request Backlog
- Nuclear Tracking System Action Status

7.B.5.b In the last quarter of 1993, Engineering worked closely with the Dedicated Architect Engineer (DAE), Sargent & Lundy, to complete a performance indicator program that would effectively monitor the DAE's performance. This included reaching agreement on the specific indicators and thresholds in the four areas of "Schedule Adherence," "Budget and Productivity Performance," "Technical Quality," and "General Personnel Performance."

- The program is based on obtaining data on each specific indicator on a monthly basis and also includes a quarterly subjective evaluation by CECo Engineering.

- The purpose of this program is to provide measurable and subjective input on the DAE's performance in order to identify areas where improvement is necessary and to also identify areas of superior performance. The DAE then formally reports back to Engineering on what process improvements or other changes they are making.

- Implemented at the beginning of 1994, this program has succeeded in improving communications between the DAE and Engineering, and already has resulted in improvements.

7.B.5.c LaSalle also has implemented an enhanced version of the System Readiness Review Board (SRRB) process in place at Byron Station by including programs, in addition to systems, in the review process.

- The pilot for the LaSalle System and SRRB was completed on March 23, 1994. The SRRB will be resumed at the end of L1R06.

- The purpose of the SRRB is to improve short term plant/system performance of selected systems and provide the necessary support to System Engineering to maintain sustained System and Program improvement over the long term.

- The system and program engineers perform formal presentations before a board of Station management that includes the Station Manager, Superintendents, Department Heads and Bargaining Unit Representatives.

7.B.5.d LaSalle Engineering is developing and will implement a self-assessment process with an established reporting format, frequency, and distribution of results.

- This effort was initiated with the use of external organizations (CECo Quality Verification, and Contract Engineering Firms) to perform a number of initial high priority assessments, including the Engineering programs for Erosion Corrosion, Check Valves, System Hydrostatic Pressure Testing, Electrical Distribution System design, and High Voltage Circuit Breakers. The latter was initiated because of internal concerns regarding the electrical distribution system and components' reliability.

- Of these, the Check Valve and Hydro Test reviews are complete, and the other reviews are nearly complete, with implementation of the recommendations in progress.

- The BUP action steps will require that the reviews be performed internally. The means to achieve this are being developed.

Objective 7.B.6: Information Management Enhancements

7.B.6.a Over the last several years, CECo has been developing and has recently begun implementing an Electronic Work Control System (EWCS) across its entire operation in order to better identify, track, and control work activities. One module of EWCS is the Engineering Design Change Module (EDCM).

- EDCM provides an integrated mechanism to manage Engineering design changes to the physical plant and associated design documentation.

- Benefits of EDCM include a streamlined work-flow process, enhanced control of the design process, increased data entry consistency, consolidation of multiple databases, an easier process for Station Personnel to request assistance from Engineering, and integration with the other EWCS Modules to allow better communication with the other Departments.

- EDCM will be implemented at LaSalle in three Phases beginning later in 1994, and ending in 1995. For approximately the last two months, LaSalle has been planning for the implementation of EDCM.

7.B.6.b The Vendor Equipment Technical Information Program (VETIP) , which is the program for the review, update and control of all vendor manuals and documentation, is being transferred from Maintenance Department ownership to System Engineering ownership.

- This transfer is being made since System Engineering can better manage the program due to having more qualified personnel available.
- Updates of Vendor supplied material will continue to be reviewed by both Maintenance and Engineering.
- The scope of the program will be expanded beyond the originally intended safety-related vendor-supplied documentation to also include balance-of-plant (BOP) vendor-supplied documentation.

7.B.6.c LaSalle Station is an active participant in the NOD Design Information Review Team (DIRT), which is tasked with determining the current status of design information, design information systems, and ongoing improvement programs from an end user perspective.

- LaSalle will implement an electronic platform that will allow access to Station basis information from controlled data bases of design basis, licensing basis, operating basis, etc.
- This effort has been phased to provide access to large amounts of high value information by the Summer of 1994. Additional information will be made available later, after it is identified by efforts similar to the NOD DIRT.
- Design Basis Document information for BOP systems and the Design Library's information will be part of this platform as information is entered into these programs.

Objective 7.B.7: System Engineering is the Technical Manager of Plant Systems

7.B.7.a LaSalle will complete its implementation of the CECo Senior System Engineer program, which establishes the System Engineering position as one for highly experienced and accomplished individuals. This departure from the historical "entry level" role for System Engineers is intended to improve retention of talented engineers and thereby improve the technical quality of the Engineering product.

- This program will encourage experienced Engineers to remain in, or to promote into, System Engineer assignment.

- Eligibility requirements include a four year college degree, various technical and job-related skills, and at least 11 years of related experience.

- Successful candidates will have to be approved by a Corporate System Engineering Review Board.

7.B.7.b A Reliability Centered Maintenance (RCM) or similar type of process will be used on selected systems and/or components to determine the basis for preventive maintenance, allow continuous improvement, increase cost effectiveness, and minimize maintenance-preventable functional failures.

7.B.7.c In 1993, CECo began implementing a strategy that would focus upon a combined effort by Maintenance and System Engineering to control the work process in order to improve equipment performance and reliability. This process is called the Maintenance Strategy. Although it is anticipated that the strategy will extend into 1995, in order to implement all of the efforts encompassed by the initiative, many items are in progress and will be in place during 1994. These areas include:

- an analysis of Maintenance activities by System Engineering, both prior to and subsequent to the work, to ensure the root cause of the repair has been correctly identified and that all other similar equipment has been addressed;

- incorporation of an RCM program which will develop statistical methods for predicting failures in order to design proper preventative maintenance schedules; and

- development of performance measurement goals and monitoring to ensure equipment maintains its highest reliability and is available at all times when needed. More importantly, with improved system performance in this manner, maintenance personnel will then be able to concentrate more fully on perfecting work techniques and processes and subsequent work performance.

7.B.7.d Probabilistic Risk Assessment (PRA) techniques will be utilized, when appropriate, as a tool to assist in the prioritization of Maintenance activities to ensure Maintenance is performed first on equipment which provides the most safety benefit.

Objective 7.B.8: Effective and Efficient Engineering Processes and Practices

7.B.8.a Engineering will identify the processes and practices that need to be revised, based on information obtained from the IQE Performance Indicators, Self-Assessments, and from subjective comments obtained from the other Departments, the DAE, and the Modification and Maintenance Contractor. Engineering will review this information and implement appropriate process improvements. Some recent examples include:

- In late 1992, a new Exempt Change (EC) Process was implemented by CECo which provided a better tool for Engineering to respond more quickly and efficiently to small design changes. However, until the Engineering reorganization of February 1993, full utilization of the process was limited due to the unavailability of the Technical Staff engineers to process small changes. Since the 1993 Engineering reorganization, the Support Engineering Department has made significant progress in turning around a large number of small changes.

- The DAE, in close cooperation with Engineering, transferred the Design Change Request (DCR) Processing Team to LaSalle Station. This was intended to provide not only efficiency gains, but to allow faster turn-around of "For Record Drawings" after the design change is installed. This offers a significant improvement for processing "Critical Control Room Drawings", whereby the "For Record Drawing" can be scheduled and used, instead of relying upon hand marked copies.

- In addition to having all designers at the Station, the DAE also has located the full time engineers at the Station. All design is now prepared at the Station. This physical proximity has enhanced the cooperation and earlier exchange of information and ideas between Operations, Maintenance, Construction, and Engineering in the preparation of design changes.

- A new Site Engineering and Construction Manager (SECM) has been appointed. This change was made to allow the previous SECM to concentrate on managing the BUP. The previous SECM had been dividing his time between managing SEC and coordinating the BUP. The new SECM can concentrate solely on the management of the SEC Organization.

7.B.8.b Engineering has fully integrated with the Dedicated Architect Engineer (Sargent & Lundy). The two engineering organizations now work in the same building, having transferred the LaSalle portion of the DAE team to the Station. This transfer includes all aspects from design development to drawing revision. Regardless of this physical change to enhance day-to-day operations, CECo will clearly retain ownership and responsibility for the technical adequacy of the Engineered product. The benefits of this revision are:

- A two-way transfer of capability between CECo engineers and the AE engineers. The extensive design experience of the AE helps educate the CECo engineers with respect to design methods and considerations that are not part of plant operational experience. At the same time, the CECo engineers knowledge of how the plant "actually" operates is serving to significantly increase the AE's understanding of the design application. This considerable learning is a beneficial result of the integrated arrangement.

- Having the AE engineer who will be part of the team that solves a problem present as the problem emerges is significantly reducing the number of iterations it takes to solve problems. This stronger convergence to successful solutions improves both efficiency and quality, is raising the standards for resolving issues. It is expected that problems will be solved quickly and completely the first time.

- These effects were observed from the results of the AE integration to the Site, which started on a smaller scale in January and February of 1993. Full incorporation was achieved in April 1994.

8. Operations

8.A Issues

Although Operation's performance has been generally acceptable, performance has declined in the following areas:

- Standards
- Rules and Procedures
- Human Performance
- Training Performance

Standards

- Station management's failure to consistently maintain high standards was reflected in the willingness of Station personnel to accept equipment problems and influenced Operators' acceptance of low standards.
  - As a result, Operators did not consistently identify problems since they believed that management would not be responsive to their input.
  - This led to a decline in Operations performance, as indicated by poor log-keeping practices, turnovers, and slow response to annunciators.
  - This also created a situation in which Operators accepted degraded equipment conditions and worked around the deficiencies.
- Housekeeping practices were allowed to decline.
- Management did not clearly communicate its expectations to the Operations staff and delegate decision making authority.
- In many cases, Operator rounds were not reviewed by the shift supervisor for several days, leaving the impression that the task was not important.

Rules and Procedures

- The control room access procedure was not consistently enforced to avoid Operator distractions. It was perceived that denying workers or engineers access would delay their tasks -- an outcome contrary to management's focus on production.

- Some radiation work rules were not consistently emphasized by management again due to the Operators' perception that strict compliance was not important if production was going to be impacted.

  - For example, the six foot rule requires a survey before climbing above six feet. This would require the Operator to stop work and wait for a survey before continuing the job. However, they have not always waited for the survey before completing the job. When reporting the task completed, supervisors would frequently not question how it was completed, presumably knowing the work would require going above six feet.

- Procedures are not user friendly and occasionally are inadequate. For example, procedures can become confusing and result in Operators not rigorously adhering to some steps. Past experience of not revising procedures in a timely manner resulted in Operator frustration and procedure deficiencies.

Human Performance

- Shift Supervisors are burdened with numerous administrative responsibilities which prevent them from spending time in the plant to supervise Operators, direct plant activities, and coach the Operators on expectations.

- The number of equipment deficiencies that impact the Operators increased the demands placed on them when taken together with other administrative burdens during day-to-day operations.

- Operating surveillance procedures do not adequately differentiate between Technical Specification operability requirements and trend analysis data, thereby implying all data taken during surveillances is Operability Related. As a result, all surveillance data out of tolerance would require an operability evaluation.

- Management expectations regarding procedural adherence was understood in the Operations Department. However, personal accountability was low and standards were not reinforced, leading to personnel errors being made during use of procedures.

- Operations personnel have not shown the proper appreciation for the radiological environment in which they work. This was demonstrated when an Operating Supervisor and Equipment Attendant obtained a sample from a Radwaste process tank without complying with the fundamental good radiation work practice of taking a dose rate prior to opening a process line. The Operators were not aware of the specific Chemistry Department procedure for performing this activity, yet they proceeded to obtain the sample.

- Component tagging and labeling deficiencies have caused human factors concerns (i.e., the inability to easily identify plant equipment and components) stemming from incomplete or missing tags or labels. These human factors concerns are multiplied when incomplete or missing information is inconsistently supplemented with hand written aids (e.g., writing on equipment panels with permanent marker). There is no ownership or specific assignment of responsibility for the overall process of maintaining program quality.

Training Performance

- Operations Management failed to ensure expectations were met during training periods at the simulator. This resulted in weaknesses in the areas of crew communication and performance.

- Drill scenarios emphasized Emergency Operating Procedures (EOP) and Design Basis Accident (DBA) scenarios, as opposed to normal Operations or normal transient responses. Operators therefore did not believe the training was as valuable as it could have been.

8.B. Objectives

Objective 8.B.1: Establish Higher Standards

8.B.1.a As described more fully in Section II.3, "Materiel Condition," Operations Management will continue to bring materiel condition deficiencies to the attention of Site Support Departments, including Maintenance and Engineering. In particular, Operations will take the following actions:

8.B.1.b Operate the plant as designed (e.g., automatic systems will be operated in automatic; remote operating capabilities will be maintained and utilized; design operating ranges will be maintained).

8.B.1.c Insist that resolution of equipment problems solve the problem with a permanent solution, instead of a temporary fix.

8.B.1.d The extent of workarounds will be reviewed by the Operations Manager and Technical Services Superintendent to ensure workarounds have high visibility.

8.B.1.e The Operations Department has developed and will maintain a list of workarounds that will be used by the Operating Engineer as a work schedule input.

8.B.1.f Regarding materiel condition deficiencies affecting continued safe and reliable plant operation, workarounds will be accepted only to the extent that long term solutions cannot be practically implemented.

8.B.1.g The Operations Manager, Technical Services Superintendent and Engineering and Construction Manager will review (twice monthly) the extent and types of workarounds and other temporary changes to ensure their cumulative effect is not substantially affecting the safe and reliable operation of the units. The review also will consider the extent of operator burden in responding to major plant transients or accident conditions.

8.B.1.h Operations will establish a threshold for the number of TSCs at the Station.

8.B.1.i Review of Operator rounds data by the Shift Supervisors every shift is being enforced at the Station. A group of Equipment Attendants are reviewing and revising the rounds package to ensure ownership is established.

8.B.1.j The Operations Manager will conduct weekly plant tours with various operating crew members to reinforce the housekeeping and materiel condition standard expected of Operations personnel.

8.B.1.k A review of control room duties involving log keeping, turnovers, and other responsibilities is being conducted to ensure expectations and standards are clearly understood and identified.

8.B.1.l A Shift Engineer Review Board (SERB) has been established. The Board consists of at least three of the six Shift Engineers and the Senior Operations Supervisor. The focus of the SERB will be to evaluate Operator performance issues and recommend solutions to solve problems and rewards to recognize professional operator practice initiatives. The SERB also will recommend improvements for the Operations Department to the Operations Manager.

8.B.1.m Operators currently are participating in review teams to improve safety practices, housekeeping issues, labeling projects and refueling outage support. For example, in the area of housekeeping, they have established cleaning carts on various floors to facilitate ease of maintaining equipment and floors clean. During the refueling outage, they are assisting in preparing equipment Out-Of-Services and evaluation of the necessary resources to accomplish various activities.

8.B.1.n To provide a new approach to Operating issues, a new Operations Manager and Senior Operating Supervisor have been named. These individuals have demonstrated the ability to communicate well and recognize the importance of continuous improvement.

8.B.1.o Operations Department personnel will visit industry-recognized good operating plants for ideas and good practices to incorporate at LaSalle.

Objective 8.B.2: Reinforce Management's Position on Adherence to Rules and Procedures

8.B.2.a Several Operating Management and Bargaining Unit employees reviewed and revised the procedure for controlling activities in the control room and communicated the expectations and responsibilities to all Operations personnel.

- Strict procedure adherence is required by Senior Operations management.

- Strict procedure adherence is required by Senior Operations management.

- Procedure adherence will be monitored and documented during Operating evolutions.

8.B.2.b A Radiation Protection Supervisor has been assigned to the Operations Department to address performance issues regarding radiological rules and procedures. (See Section II.2, "Radiation Protection")

8.B.2.c A Radiation Protection Technician has been assigned to each operating shift to ensure Technicians are available to assist the Operators.

8.B.2.d The Operations Manager has conducted individual crew meetings to ensure Operations personnel understand the importance and responsibility of each individual to comply with radiation rules and standards and the expectation for procedural compliance.

- Senior Operations management will provide regular feedback to Operations supervisors to reinforce performance expectations (e.g., through increased Control Room and simulator overviews).

Objective 8.B.3: Improve Human Performance

8.B.3.a The Operations Manager has communicated the expectation that supervisors will get into the field and monitor Operator activities. Oversight will focus on ensuring radiation standards and procedures are understood and complied with, as well as coaching the Operators on roles and expectation and receiving operator feedback and suggestions.

- This has required reprioritizing the work performed by the supervisors and is being evaluated for effectiveness.

- Additional consideration is being given to process improvements (i.e., re-assigning the jumper and lifted lead inventory requirements to other departments) and increasing Operating resources.

8.B.3.b The Operations Manager is establishing a program to address improving the quality of the Operating procedures. This program has started and will require several years to complete. This upgrade will improve Operators' confidence in the quality of the procedures. The improvement also will include adding the appropriate differentiation between Technical Specifications and data used for trending.

8.B.3.c The Operations Manager has established weekly communications meeting with Operating crews. Each weekly meeting includes two crews so, every three weeks, each crew attends a session. In addition to discussing Operating performance issues, the meeting will be an opportunity for employees to provide feedback and suggestions to Operations management.

8.B.3.d Operations Management and supervisors will continually emphasize the importance of applying the STAR (Stop, Think, Act, Review) principle to activities to instill a conservative, cautious, and questioning attitude in all Operating personnel.

8.B.3.e The Operations Manager has established bi-weekly meetings with the Shift Engineers to ensure that he effectively communicates and discusses expectations and standards.

8.B.3.f All Operating Bargaining Unit Employees will receive a standardized performance rating from their Shift Supervisors. This is intended to improve communications and allow the Shift Engineer the opportunity to reinforce expectations and establish accountability, along with receiving employee suggestions and input.

8.B.3.g Roles and responsibilities are being formally developed for all Operating Bargaining Unit positions, through a joint effort between Operations management and Bargaining Unit individuals.

8.B.3.h The Operations Manager has been named as the lead person for the plant labeling and upgrade project. Other CECo Station labeling programs will be reviewed and a methodology for identifying, tracking, and relabeling components will be developed and included in the project plan.

Objective 8.B.4: Improve Training Performance

8.B.4.a Crew composition for simulator training will be changed to include all licensed members of the crew.

8.B.4.b An instructor has been assigned the duties of monitoring and facilitating communications in the simulator. A communication consultant has also been obtained to assist in improving communications in the simulator.

8.B.4.c An organizational Effectiveness Consultant spends one day with each crew during their training week to assist in correcting communication weaknesses. This adds an additional benefit to the other individuals also observing the communications activities.

8.B.4.d The Operations Manager and Senior Operating Supervisor are working with the lead instructor at the simulator to develop more realistic drills that can be conducted along with the more complex casualty scenarios.

8.B.4.e Senior Management personnel attend simulator training one day each week to overview training and crew performance and to correct observed weaknesses.

8.B.4.f A licensed Training Instructor is assigned to each crew to spend time on shift looking for any skills weaknesses and training opportunities. This also provides the Instructors with plant experience and credibility among the Operators.

ATTACHMENT 1

Accomplishments To Date

Numerous initial steps towards effecting immediate or near-term improvement in LaSalle's performance have been completed or have been implemented.

Management and Leadership

Changes In Management Assignment

To begin addressing those deficiencies which are rooted in management performance, the Site Vice-President, who came from outside Commonwealth Edison in February 1993, has made several management assignment changes and additions. These changes and additions were made to ensure that effective leaders were placed in key manager and supervisor roles so that the need for change could be more readily recognized and more effectively implemented to improve performance. In particular, the personnel selected were judged by the Site Vice President and Chief Nuclear Officer as people who will be successful in achieving the necessary performance improvements.

New manager and supervisory personnel include:

- Don Ray, Station Manager
- Jim Abel, Site Engineering and Construction Manager
- Jim Gieseker, Business Unit Plan Manager
- Dennis Leggett, Operations Manager
- Jim Dedin, Senior Operating Supervisor
- Les Guthrie, Maintenance Superintendent
- Dave Farr, Technical Superintendent
- JoEllen Burns, Executive Assistant to the SVP
- Wayne Walschot, Self-Assessment Director
- Dwight Bowman, Chemistry Supervisor
- Rick Shields, System Engineering Supervisor (6/30/94)

Other positions were recently filled with personnel having experience from outside LaSalle during the division wide reorganization in December of 1992. In total, LaSalle has filled eleven of the fifteen senior manager positions with experienced personnel from outside of the Station since December of 1992.

These new Managers and Supervisors will provide the leadership needed to improve LaSalle's performance by setting high standards, communicating clear expectations and assigning accountability.

Dedicated BUP Team

In order to assure sufficient management resources are dedicated to achieve successful and sustained improvement, a dedicated BUP Group has been created. The group has been staffed with successful managers and experienced technical experts. This group will assist the responsible line managers in the implementation of the detailed actions summarized in the management summary. The group will help assure action plan owner accountability, will monitor corrective action implementation,and measure the effectiveness of corrective actions.

Plant Operating Review Committee

The station has developed and implemented a Plant Operating Review Committee, which is a process where the senior managers of the station meet on a regular basis to review items of importance to nuclear safety and those required to be reviewed by the Technical Specifications. These items include certain required procedures, temporary system changes, Level 3 and above PIF's, LER's, Technical Specification change requests, and other issues generally reviewed by the On-site Review process. The Site Vice President has documented criteria that must be met prior to allowing Unit 1 to startup. See Attachment 3.

The station has piloted a System / Program Readiness Review process to improve short term plant/system performance of selected systems and programs. Senior Station Management provides review and input on system/program status to support system engineering in maintaining sustained system and program improvements over the long term. This program is an enhanced version of the program implemented at Byron Station.

The Site Vice President has required senior managers to spend 20% of their time "in the plant" with an intentionality to interact with workers in the field. This provides a direct path for two way communications.

LaSalle Station has implemented a Senior Manager On-Site program that assigns senior managers a rotating schedule with department heads to perform an oversight function. The team works together to follow jobs in the field, allows them to coach personnel on job activities, monitor personnel performance, and provide guidance in management's expectations of station personnel. The oversight function will provide station management with first-hand awareness of the problems encountered by the workers in the field, and will allow management to be proactive to resolution of potential issues. Managers observe worker's performance in areas such as radiological work practices, personnel safety, procedural adherence, housekeeping, and material condition.

Weekly communication meetings have always been a practice at LaSalle. To take advantage of these scheduled meetings, Senior Managers have been assigned a rotation through all departments on a weekly basis to personally convey a common message to Station personnel, previously agreed upon by the Senior Management Team, and to discuss their individual activities.

The Performance Planning and Review Process (PPR) has been revised to link 50% of each individual's performance rating to achievement of the 1994 Major Station Goals. This change is to assign accountability to the station employees for the performance of the station.

The Station Manager and the Site Vice President have instituted an open door policy for all employees. They have made themselves available one afternoon per week to discuss any issue in an attempt to improve two-way communications.

Radiation Protection

Team building sessions have been held with the Rad Techs and their department management.

The Rad Protection department has implemented "ZONE COVERAGE" of the reactor and turbine buildings. A Tech is assigned to the zones in order to increase availability to answer questions, provide tech coverage and to monitor work in the RPA to ensure compliance with RP standards.

Radiation Protection personnel have been issued purple hard hats to aid in easy identification in the field. This enables workers to obtain directions and assistance more easily and to minimize the occurrence of poor assumptions. Feedback on this improvement has been very positive.

The station has developed and implemented a Radiation Worker Responsibility and Accountability seminar which addresses the expectations for each person. All rad workers, both station and contractor, will participate in one of these seminars over the next six weeks.

The Site Vice President has communicated to managers and workers his expectations on their responsibilities as radiation workers. Further, he has made compliance to the expectations a condition of employment for all personnel. See Attachment 2.

In an effort to regain control of activities and personnel in the RPA, the number of ingress/egress points into the RCA has been reduced from 6 to 2. Management personnel have been assigned at the two RPA access points around the clock to:

- underscore the significance of the need to improve RP performance;
- demonstrate management's commitment to improve RP work practices; and
- monitor and hold accountable personnel for proper RP and performance practices.

INPO's Radiation Protection Manager is on loan to the station to assist in improving the rad protection program. The loanee reports directly to the Site Vice President.

In the area of reducing the radiation source term we have:

- completed a chemical decontamination of the reactor recirculation piping on Unit 1 in which a decontamination factor of 10 was achieved;

- a depleted zinc injection system was installed on Unit 1 just before the start of the current refuel outage. The system will resume operation after Unit 1 startup, and will be installed on Unit 2 during its next refuel outage. The zinc will help reduce the radiation field in the reactor coolant system piping;

- initiated a hot spot removal program. Thirteen of the 21 hot spots planned for elimination have been removed; and

- a Senior Supervisor has been named as the Source Term Project Administrator.

Increased focus on ALARA through pre-job planning and inclusion of RP in all major projects has resulted in significant dose savings. The top ten repetitive jobs identified for the current outage have used 47% of the dose allotted per the stretch goal with 68% of the work accomplished. In addition, total outage exposure is under the stretch goal identified at the beginning of the current outage.

Materiel Condition

The following is a list of the Materiel Condition improvement items that have been completed for Unit 1:

Suppression Pool / ECCS Strainer Cleanup

The station inspected the Unit 1 ECCS suction strainers as part of the evaluation of possible or desirable actions to ensure that the ECCS suction strainers do not accumulate materials which could impair their function during design basis events. This identified the presence of a minor amount of foreign materials (including a portion of old Anti-C's, two lengths of hose, a hard hat and a strand of duct tape). The material was removed or will be removed prior to startup, and all ECCS strainers were wire-brushed clean of minor scale. The two pool dives will have increased the assurance of ECCS strainer capability.

ECCS And RCIC Injection Valves Hydraulic Locking

Due to industry concerns with hydraulic locking of MOVs (preventing the valve from opening on demand), LaSalle assembled a listing of highly susceptible MOVs based on the potential for hydraulic locking and the safety importance of the valves. All the Unit 1 ECCS injection valves and the RCIC injection valves have been modified to prevent hydraulic locking. The corresponding Unit 2 valves will be modified in L2R06.

RHR Heat Exchanger Baffle Plate Seals

Past performance monitoring of the RHR Heat Exchanger cooling water system detected "short circuiting" of the cooling water flow. A portion of the cooling water was leaking past the divider plate to tube sheet seal in the water box and reducing the cooling water flow through the tubes. Since temporary fixes were implemented in past outages, the condition still required monitoring and refurbishment at each refueling outage. A permanent improvement was designed and installed during L1R06 to provide a better seal and a protective plate for the tubesheet/baffle plate connection. This improvement will eliminate the RHR Heat Exchanger cooling water "short circuiting" problem, reduce the need for monitoring and eliminate the need for refurbishment at each refueling outage.

Turbine Driven Reactor Feedpumps (TDRFP)

A long standing Operator Workaround at LaSalle has been resolved during the past 6 months. This problem involved the inability to operate both of the TDRFP in automatic. This has been a problem on both units since initial plant startup.

If both TDRFPs on a unit were placed in automatic control, they would begin to "fight" and either have large flow swings on both pumps, or the discharge pressure of one pump would dominate the feedwater piping, and that pump would go to a high flow and "choke off" the other pump due to increased resistance in it's flowpath.

What the Instrument Maintenance and System Engineering personnel found was that pneumatic positioners for the TDRFP speed control valves had too much deadband and the controller gain was too high. The positioner needed a large demand to start motion, then it would move too far (overshoot). As a result the turbine speed control was not stable. Several significant corrections were applied, including removing air leaks, pneumatic balancing, and lubrication of various components and connections. A vendor specializing lubrication of racing car engine cylinders was contacted to provide a low friction coating to the pneumatic cylinder walls. The resulting graphite coating helped but was not sufficient to get a low enough deadband. The IMs then improved that solution by taking the graphite coated cylinder, sanding the inside, soaking the lining with a second graphite solution, then polish sanding (#1500 grit). The final trial solution was qualified on a bench test to verify no wear at 50,000 cycles.

This has achieved exceptionally low deadband levels that have been good enough to operate both pumps in 3 Element Automatic control. This makes for much better level response to transients (power changes, etc), and greatly simplifies the actions that the operators have to take during transients or scrams.

The solution was implemented on the Unit 2 TDRFPs and has been operating successfully since Unit 2 startup in December 1993. The Unit 1 TDRFP speed control was replaced with a different speed control loop design (completely hydraulic). The lessons learned from the Unit 2 efforts were valuable to ensure balanced components, and making the setup between the two TDRFPs identical. Unit 1 feedwater pump operation is expected to be as stable and capable of fully automatic operation as Unit 2 has achieved.

SRV Actuator Overhaul And Testing

The pneumatic actuators for the Rx Vessel Safety Relief Valves were reviewed for internal component operating lifetime. This review determined that certain internal seals had recommended replacement intervals that were being exceeded. The actuators are not part of the SRVs safety function, except for the Automatic Depressurization System (ADS) valves. Only the relief function of the (Crosby) SRVs is affected by the condition of the actuators. Although no performance problems had been noticed during past cycles, the replacement/overhaul of the actuators was appropriate and was completed in L1R06. In addition, an enhanced testing methodology was developed and implemented through cooperation with PP&L's Susquehanna station, which allows off-line testing of the SRVs, thereby reducing the potential for seat leakage.

CSCS Pump Bearings

Previous difficulties with equipment cooling water pump bearing oilers have been eliminated by changing several pumps to use greased bearings. This avoids reliance on oilers which have very little tolerance for deviations in their elevation settings. The greased bearings improve the reliability of this equipment.

Anti-Hammer Circuit Changes To MOVs

Motor-operated valves which have "throttleable" control circuits, in certain conditions were experiencing the motor "hammering" the valve closed and possibly damaging the valve internals. The station devised a circuit change to prevent this condition, and avoid the motor and valve component loadings associated with the rapid motor starts and stops.

Feed Pump Oil Leaks

Oil leaks were experienced on inboard side of pump. These leaks contributed to repeat operational problems. The coupling guards have been modified to eliminate a low pressure area at the pump shaft that was causing oil to leak.

Motor Driven Feedwater Pump Feed Regulation Valve

An operator workaround was eliminated when the action pack relay was set so that it does not give lockout signal to lockout valve when doing the daily stroking surveillance for this standby pump.

Post-LOCA Oxygen/Hydrogen Monitors

The Brooks flowmeters were replaced with Mathesons flowmeters to improve performance. The Mathesons allow for a more concise calibration of panels. The panels are easier to calibrate and the panels performance has improved.

Feedwater Heaters And Heater Drains

During L1RO6, approximately 60% of all heater bay valves are being tested and repaired by the Air Operated Valve (AOV) group and working departments. As a result of this successful program, increased system reliability is expected (as observed on Unit 2) with reduced potential for remedial operator actions. Among the problems which were found and corrected include:

- degraded elastomers which includes gaskets, O-rings, seals, and diaphragms;
- excessive valve friction due to bent stems, and debris found in the valve;
- packing problems;
- positioner problems which included unsecured feedback linkages and improper feedback linkage lengths;
- actuator and valve coupling problems;
- all pressure regulators replaced with Fisher high temperature regulators; and
- booster relays found leaking or not adjusted properly;
- valve plug seal rings found improperly installed; and
- instrument air lines found bent or damaged.

Low Pressure Feedwater Heaters

Four (4) Low Pressure Feedwater Heaters were opened and eddy current inspections were performed in order to provide a condition assessment of the tube bundles. This lead to taking 5 tubes out of service due to degraded wall thicknesses that could of resulted in tube failures during unit operation possibly resulting in a reactor scram.

Rod Worth Minimizer (RWM) Modification

The RWM modification prevents the operator from experiencing a condition where 3-4 minutes after a scram some rods are not indicating full-in because they are being driven past full in indication (00). Until the scram is reset, the operators may have as many as 6 or 7 rods in this condition. Testing of the reed switches and magnets have found the magnet strength, temperature of the drive and setting of the reed switches to be very sensitive, making it very easy to have some rods that lose indication until after the scram is reset (drive settles back). A LaSalle survey of the industry found that many BWR plants have very similar challenges. This modification to RWM takes advantage of the very rapid scan rate of the LaSalle RPIS system, and electronically "latches" the full in indication as the rod passes 00 on the way in. It will show modified full-in indication if the normal full-in indication is not present. If the rod should slip back out to any other valid position, this modification has no effect. This modification saves a lot of man-Rem and cost (versus long, precise adjustment attempts), and significantly reduces the chance that the Control Room Operator will experience confusion or potentially complicate scram recovery. The modification will be installed in Unit 1 during the current Refuel outage. The Unit 2 modification schedule is not set yet, but is likely to be performed in L2R06.

Turbine Lubricating Oil Cooling System

The cooling water (service water) piping design is overdesigned for all but the most extreme combinations of high service water temperature, high turbine load, and system capacity. For normal conditions, the temperature control valve (TCV) that throttles the service water flow must operate in a small window from ~0-5% of span. This has made it necessary to manually operate the smaller TCV bypass line to achieve temperature control of turbine lubricating oil, especially during turbine startup and shutdown. The excessive throttling of the TCV and bypass valve causes cavitation and downstream damage of the service water piping. The solution to the problem is reaching closure, with the recent installation of a newly designed stacked disk ("drag") regulating valve, as well as repair of the erosion damaged portions of the system. Still outstanding for complete resolution is the changeout of the pneumatic controller with a smaller span device. The new valve design was installed during the last Unit 2 outage, and during the current Unit 1 outage, and excellent results in temperature regulation were achieved, without the need for manual operation of the bypass valve.

New Shaft And Internals For RHR Pump

In late 1992, the overall vibration levels on the 1A RHR pump entered the ASME "Alert" range, and continued trending slightly upward since that time. In February of 1994, a chain-like noise was heard coming from the pump coupling area. The results of vibration analysis indicated that the lower motor bearing was failing. Although it was established that the lower motor bearing was degraded, the cause and extent of the damage could not be determined based solely on vibration analysis, thus it was possible that pump wear or damage was contributing to or causing the motor bearing failure. The complete disassembly and inspection of the pump was estimated to take 25 REM and the work would be expensive and likely to impact outage duration. System Engineering recommendations pointed out the need for complete disassembly to perform an adequate root cause analysis and restore the condition of the pump/motor.

It was decided by station management to inspect and as needed repair both motor and pump, and complete all necessary repairs prior to startup from the current unit 1 outage.

Extensive preplanning measures were undertaken by the project team to minimize dose, costs and outage duration.

The effort to disassemble the pump and motor to find the root cause and any contributing factors paid off when both motor and pump problems were found. The root cause information will now be used to improve the materiel condition of the system by allowing for the revision of the preventive maintenance program for the pumps, and to aid in the evaluation of performance data of the pump.

Minor Maintenance Program

The worker response to the minor maintenance program was positive in that the workers welcome the opportunity to achieve visible results without undue administrative process delays. Worker response has increased involvement and suggestions for increasing the program's value.

Miscellaneous Materiel Condition Improvements

LaSalle has achieved significant materiel condition improvements during the Unit 1 Sixth refuel outage (L1R06). These efforts include resolution of a number of equipment problems as well as reliability improvements such as:

- Feedwater injection isolation and check valves

  An accumulation of several outage's worth of partial alignment fixes and component fit-up problems was eliminated when these valves were returned to their original bore and alignment tolerances.

- Motor Operated Valve upgrades for Improved Thrust Margin

  RHR Full Flow Test valves Anti Cavitation trim
  ECCS Injection valve gearing changes (all ECCS Injection Valves)

- Reactor Building Ventilation isolation dampers

  Replaced actuators, increased closing spring force and realigned damper blades

- ECCS and RCIC testable check valve position indicating linkages and hardware

  Redesigned, solid connection for position indication cam

- TDRFP Turning Gear

  Low torque limit switch improved engage operation

- Diesel Generator Fuel Oil Manway Leaks

  Manways were fixed to eliminate leaks

- Diesel Generator 0 and 1A Cooling Water Pump Bearing Lubrication

  Lubrication changed from oil to grease

The materiel condition improvements from these efforts and the application of increased resources has raised many workers' standards for quality and efficiency. This has shown itself in the participation in the Integrated Reporting Program by the site workers, as well as direct feedback from craft labor, who have exhibited increased pride and ownership in the plant and equipment. As described earlier with regards to the minor maintenance program, worker enthusiasm in participating in plant improvements is visible in both the quality of work product and the teamwork demonstrated between work groups.

Issues Management

All PIFs are reviewed at the Event Screening Meeting (ESM). This meeting is chaired by the Station Manager (SM) and composed of the SM's direct reports and most direct reports of the SVP. The SM has accepted ownership of the Integrated Reporting Program (IRP) as a tool to communicate standards and expectations in dealing with problems and their effective resolution.

Informed site personnel on description and use of PIFs, including threshold guidance and relationship to other reporting methods, encouraged submittal of any perceived problem issue on PIF if unclear what should be used.

Developed a simplified PIF instruction form.

A Self-Assessment Director position has been established and filled.

LaSalle is implementing an electronic performance monitoring tool based on Zion's (Integrated Quality Effort) IQE process. Monthly Self-Assessment Meetings have been initiated.

Overdue action items are being discussed by Station Manager, SEC Manager, and Services Director with their direct reports on a periodic basis since mid February 1994.

A decision making process working group has been established to develop the process by which issues are reviewed, prioritized, assigned and authorized.

Reviewed and improved existing processes that critically examine and respond to emerging issues to determine their applicability at LaSalle.

In early November, 1993 QV established its Corrective Action Escalation Policy with station management. In December, 1993 a list of overdue QV issues was issued to station management and by January 22, 1994 all past due QV issues were either resolved or acceptably on track to resolution. There has been no recurrence of an overdue QV issue since January 1994.

Established procedural criteria for QV acceptance of Station response and adequacy of proposed corrective actions.

Dedicated Root Cause Group

A dedicated Root Cause group was formed in February 1994, and is located in the System Engineering Department. The group charter is to perform and promote good root cause evaluations for high significance issues (equipment problems and performance issues). After consultation with root cause specialists from Failure Prevention International (FPI), the LaSalle group was formed. These consultations have contributed to a vision that expects the benefits of detailed root cause capabilities to influence other station personnel as the group accomplishes successful root cause determination efforts. The capabilities which are expected to expand include the high standards for observation of initial conditions, root cause processes, and specific technical knowledge such as the appearance of materials after certain failure modes are experienced. The influence of this approach has been seen in the engineers who have participated in investigations held recently (with FPI assistance) for the Reactor Recirculation pumps, the RR piping snubber evaluations, and the Reactor Core Isolation Cooling turbine.

Workforce Management

Line Management has developed a tool to evaluate bargaining unit employees, as well as a "Reverse Review" tool for use by bargaining unit employees to evaluate their supervision.

Agreement with the bargaining unit and direction to maintenance groups has been issued to have workers decon localized areas of contamination as part of post job housekeeping duties. This will improve efficiency of the workforce and will prevent unneeded spread of contamination.

Interstation personnel exchanges have been accomplished in Work Planning, Maintenance, and Rad Protection with both bargaining unit and management. These exchanges within Edison have facilitated exchanging methods and ideas, and has improved morale and ownership in ideas that are instituted at LaSalle. (Efforts to exchange outside of Edison will also be undertaken - H.R. has been charged with effecting 8 such exchanges per year).

The Safety Manager Concept has been implemented. The position will functionally manage the Safety Committee, investigate safety/Industrial Hygiene technologies, and communicate safety philosophies through the Plan of the Day Meeting, weekly SVP meetings, and Department Safety Meetings.

LaSalle Safety performance measures have been changed to focus on the Industrial Safety Accident Rate and OSHA recordables, which respond more quickly to changes in safety attitude and effort than the Lost Time Accident indicator used in the past.

The Safety Manger has increased in plant time from 25% to 50% of his time at the Station. This is being accomplished by turning over safety programs, traditionally run by safety managers, to line management. These programs will then be monitored from the field by the Safety Manager. The Confined Space Program is one such program that has been turned over (to Maintenance). The Heat Stress Program is in process of turn over to Rad Protection.

MAINTENANCE

Corrective Actions Team

A composite maintenance crew known as the CAT (Corrective Actions Team) is being used to immediately correct deficiencies in the plant relating to RPA housekeeping items as well as routine minor maintenance. Although housekeeping remains the responsibility of line management, the CAT has shown to be effective in improving and maintaining the housekeeping of the plant in an improved condition.

Unit 1 was forced into an outage in February. During this time, the station made the decision to not restart Unit one and use the time during shutdown to address several material condition items prior to beginning the refuel outage in March. Equipment worked on during this time included Reactor Recirculation Flow Control Actuators, the Reactor Manual Control system, A RHR motor and pump diagnostics and repair, and Reactor Building Ventilation damper actuator replacement.

The station has implemented a Work Control Center to centralize and organize outage work. Key outage representatives along with some work processes have been relocated to the work control center to facilitate interdepartment communications and teamwork. This has reduced the administrative burden placed on the Shift Engineers and Shift Supervisors as well as allowed for closer coordination of support functions. This has reduced lost work efficiencies and work delays which translates into radiation exposure savings and a less frustrated workforce.

Maintenance training has been revised to increase the use of mock up training. For example, an instrument rack for instrument technicians is used that simulates actual plant conditions including the Radiological conditions. An RPT is also present at the training to provide guidance and assistance.

Maintenance has obtained and used the services of a crew of mechanical maintenance personnel along with a supervisor and a work analyst from Byron Station to work as a supplement to the mechanical maintenance department. These personnel have been involved in many maintenance activities and have brought new ideas. This type of exchange has also occurred in the Rad Protection Department. For example:

- a routine outage job on the control rod drive control valves was completed at a savings of over 400 hours and over 1.7 person-rem dose savings. This was due to implementing a suggestion from a maintenance worker and the teamwork between a LaSalle maintenance crew and a Byron maintenance crew.

Engineering

System Engineering has recently completed a Job Task Analysis. This information will assist in the development of clear roles, responsibilities, and interfaces for System Engineering.

Engineering has already taken steps to provide additional professional/technical development to attain a skill set that will lead to qualifications for higher level positions within the Engineering Department and greater experience levels overall. Examples include:

- System Engineering has developed an a Senior Reactor Operator (SRO) Rotation Initiative through which System Engineers will be selected to complete formal SRO Training and required to obtain their license. These engineers will then serve approximately 2-3 years in Operations prior to returning to System Engineering. The first three System Engineers have been selected and will be scheduled for this program later in 1994.

- The Group Leads, together with some engineers in System Engineering, recently have completed a six week Certification Training course in the various Systems.

- System Engineering Group Leads have attended the Management Development Training/Course at the Leadership Development Center (LDC).

A computerized Engineering Assignment Tracking system has been implemented, during 1993 and early 1994, for both the Station Support and the System Engineering Departments. This database contains issues assigned to engineers with vital information such as priorities, due dates, and periodic updates. This system provides the ability to track the status of issues and document activities. It also has improved the management of Engineering resources and led to quality documentation of issues, resource allocation, and results.

In the last quarter of 1993, Engineering worked closely with the Dedicated Architect Engineer (DAE), Sargent & Lundy, to complete a performance indicator program that would effectively monitor the DAE's performance. This included reaching agreement on the specific indicators and thresholds in the four areas of "Schedule Adherence," "Budget and Productivity Performance," "Technical Quality," and "General Personnel Performance."

- The program is based on obtaining data on each specific indicator on a monthly basis and also includes a quarterly subjective evaluation by CECo Engineering.

- This purpose of this program is to provide measurable and subjective input on the DAE's performance in order to identify areas where improvement is necessary and to also identify areas of superior performance. The DAE then formally reports back to Engineering on what process improvements or other changes they are making.

- Officially implemented at the beginning of 1994, this program has succeeded in improving communications between the DAE and Engineering, and already has resulted in improvements.

LaSalle also has implemented an enhanced version of the System Readiness Review Board (SRRB) process in place at Byron Station by including programs, in addition to systems, in the review process. The purpose of the SRRB is to improve short term plant/system performance of selected systems and provide the necessary support to System Engineering to maintain sustained System and Program improvement over the long term. The pilot for the LaSalle System and SRRB was completed on March 23, 1994. The SRRB will be implemented at the end of L1R06.

LaSalle is developing and will implement an Engineering self-assessment process with an established reporting format, frequency, and distribution of results. This effort was initiated with the use of external organizations (CECo Quality Verification, and Contract Engineering Firms) to perform a number of initial high priority assessments, including the Engineering programs for Erosion Corrosion, Check Valves, System Hydrostatic Pressure Testing, Electrical Distribution System design, and High Voltage Circuit Breakers. The latter was initiated because of internal concerns regarding the electrical distribution system and components' reliability. Of these, the Check Valve and Hydro Test reviews are complete, and the other reviews are nearly complete, with implementation of the recommendations in progress.

LaSalle has established a Senior System Engineer program, which establishes the System Engineering position as one for highly experienced and accomplished individuals. The first Senior System Engineer has been designated and is expected to be transferred to this new position on 6-01-94. This departure from the historical "entry level" role for System Engineers is intended to improve retention of talented engineers and thereby improve the technical quality of the Engineering product.

In late 1992, a new Exempt Change (EC) Process was implemented by CECo which provided a better tool for Engineering to respond more quickly and efficiently to small design changes. However, until the Engineering reorganization of February 1993, full utilization of the process was limited due to the unavailability of the Technical Staff engineers to process small changes. Since the 1993 Engineering reorganization, the Station Support Department has made significant progress in turning around a large number of small changes.

The DAE, in close cooperation with Engineering, transferred the Dedicated Design Change Request (DCR) Processing Team to LaSalle Station. This was intended to provide not only efficiency gains, but to allow faster turn-around of For Record Drawings after the design change is installed and the system declared operable. This offers a significant improvement for processing Critical Control Room Drawings, whereby the For Record Drawing can be scheduled to be processed to allow use of the issued For Record Drawing instead of relying upon hand marked copies.

In addition to having all designers at the Station, the DAE also has located the full time engineers to the Station. All design is now prepared at the Station. This physical proximity has enhanced the cooperation and earlier exchange of information and ideas between Operations, Maintenance, Construction, and Engineering in the preparation of design changes.

A new Site Engineering and Construction Manager (SECM) has been appointed. This change was made to allow the previous SECM to concentrate on managing the BUP. The new SECM can concentrate solely on the management of the SEC Organization.

LaSalle Station has re-written its relationship with its dedicated Architect Engineer (Sargent & Lundy). The two engineering organizations now work in the same building, having transferred the LaSalle portion of the AE team to the Station. This transfer includes all aspects from design development to drawing revision. The benefits of this revision have been distinct:

- A two-way transfer of capability between the Station ("CECo") engineers and the AE engineers. The extensive design experience of the AE helps educate the younger CECo engineers with respect to design methods and considerations that are not naturally part of plant operational experience. At the same time, the CECo engineers knowledge of how the plant "actually" operates is serving to significantly increase the AE's understanding of the design application. Both groups point to considerable learning as an enjoyable result of the arrangement.

- Having the AE engineer who will be part of the team that solves a problem present as the problem emerges is significantly reducing the number of iterations it takes to solve problems. This stronger convergence to successful solutions improves both efficiency and quality, and also appears to be raising the standards for resolving issues. This change in standards is occurring amongst the engineers themselves.

- These effects were observed from the results of the AE integration to the Station, which started on a smaller scale in January and February of 1993. Full incorporation was achieved in April 1994. Although the original intent of the integration was primarily to realize efficiency gains (and staff assistance), the benefits mentioned above appear to be of even greater value than the direct efficiency gains.

Operations

Beginning June 5, 1994, the crew composite for simulator training will be changed to include all license members of the crew. This will enhance the training and teamwork of the crew.

Control room access procedure has been revised and expectations for access to the control room have been communicated to the shift crews with the expectations to enforce them. This has also been communicated to the station.

An instructor has been assigned the duties of monitoring and facilitating communications in the simulator. A communication consultant, with extensive industry experience, has also been obtained to assist in improving control room communications. Also, an Organizational consultant spends 1 day with each crew during their training week to assist in correcting communication weaknesses. This adds an additional benefit to view communication practices from a slightly different perspective.

Operations has included the Bargaining Unit in several new initiatives:

- rounds review and revision; Rounds are being reviewed by the operators to maximize the value of the rounds and establish ownership;

- writing Out of Services; Historically Out Of Service writing and revising procedures has been a management function. The Bargaining Unit participation allows the additional benefit of utilizing their expertise and increases productivity;

- revising procedures; and

- assigning NSOs to Training, and other departments temporarily as union job assignments. Assigning NSO's to training on a rotating basis provides a stronger training organization and better trained operating personnel.

A computerized Degraded Equipment Log has been developed and implemented. This provides the control room SRO quick, easy access to the information available in the DEL, minimizing potential oversights.

A licensed training instructor has been assigned to each operating crew to identify strengths and weaknesses and improve training opportunities. This also provides training personnel with plant experience.