

Clinton Power Station Plan for Excellence

Operational
Excellence

Pride & Excellence in
Nuclear Generation

SALP I

INPO I

Management, Supervision
& Oversight

People

Programs & Processes

Plant Equipment
Performance

We and our company are dedicated to doing the right thing, doing our best, and providing safe, reliable generation by working together.

Plan For Excellence Summary

9802260094 980219
PDR ADOCK 05000461
P PDR

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**SUMMARY OF THE
CLINTON POWER STATION
PLAN FOR EXCELLENCE**

PLAN FOR EXCELLENCE SUMMARY

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ATTACHMENT - CPS LEVEL I SCHEDULE THROUGH JUNE 1998

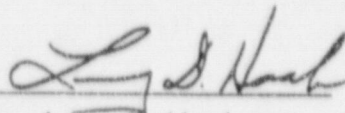
STATEMENT OF THE CHAIRMAN, PRESIDENT, AND CHIEF EXECUTIVE OFFICER

As Chairman, President, and Chief Executive Officer of Illinova, I want to state in the strongest possible terms my intention and commitment, as well as that of the Board of Directors to operating Clinton Power Station (CPS) in the safest and most reliable manner achievable. The organization has undergone extensive internal and external assessments which have pointed out many weaknesses in our prior management, processes, and execution of safely operating CPS.

You and the management team have developed the Plan for Excellence which is a comprehensive plan to achieve the vision of "Pride and Excellence in Nuclear Generation - SALP 1 and INPO 1." The Plan for Excellence is the guiding document for long term continuous improvement. To sustain operational excellence, we will need to be constantly vigilant throughout the life of CPS.

Toward this end, we have put in place an experienced management team which will instill a questioning attitude and develop a safety culture which will instill confidence in our stakeholders - shareholders, customers and employees - that we can safely and efficiently operate Clinton Power Station within the regulatory requirements and achieve operational excellence.

This will require commitment on everyone's part to be the best we can be at all times and learn from our own and the industry's experience in order to continually improve. I am committed to provide the resources necessary to meet this end. Together we can and will safely operate Clinton Power Station from this day forward.


Larry D. Haab

STATEMENT OF THE CHIEF NUCLEAR OFFICER

The safe and reliable operation of Clinton Power Station (CPS) is of paramount importance to the success of the Illinois Power (IP) Nuclear Power Program. However, beyond safety, we strive to achieve our vision of pride and excellence in nuclear generation. To accomplish this vision, we will focus on several broad areas.

First, we will improve the **safety culture** at CPS. Our new culture will stress conservative decisionmaking, self-checking, and identification and correction of our own problems. Safety will be given preference over production.

Second, we will improve **work execution** at CPS. This means more than improving the Work Management program. To improve work execution, we will take action to ensure that every individual at CPS understands and carries out the responsibility of getting his or her work done in a safe, effective, and timely manner.

Third, we will improve **station accountability**. We will take steps to ensure that every individual assumes accountability for his or her tasks and learns from his or her mistakes and successes. This attitude will enable CPS to become a learning organization.

Finally, we will improve **site-wide communication** so that employees understand our expectations for running a safe nuclear plant with high standards of performance. We will improve our communications processes so that we constantly reinforce expectations and continuously receive valuable feedback from our employees.

Our Plan for Excellence identifies numerous actions to achieve these goals. The Plan provides a comprehensive set of strategies and associated actions necessary to achieve excellence in operations. We realize that this is a long-term process. We will be timing the implementation of the various elements of these strategies to maximum benefit to safely operate the plant while seeking operational excellence.

This will take total commitment from all of us to ensure success. The ownership of Clinton Power Station and its successes rest with its employees. We are the ones who can make a difference - don't wait for someone else to lead or make the difference. Be the Leader - become involved - and make it happen.

I am fully committed to our Plan for Excellence, and each of you will need to join me in this endeavor. Together, we can achieve our vision of "Pride and Excellence in Nuclear Generation - - SALP 1 - INPO 1."

A handwritten signature in black ink, appearing to read "Walter G. MacFarland IV", written over a horizontal line.

Walter G. MacFarland IV

1.0 INTRODUCTION

Internal and external reviews of Clinton Power Station (CPS) have identified weaknesses in several important areas, as demonstrated by a several-year decline in performance and the current extended outage. Illinois Power Company (IP) is committed to correction of these weaknesses and is striving to achieve the highest safety, performance, and reliability standards for CPS.

To accomplish these goals, CPS is developing and implementing the Plan for Excellence. The Plan for Excellence addresses the fundamental causes for the performance decline. It identifies those actions that must be effectively implemented to recover and safely restart the station. Furthermore, it identifies those actions that will be ongoing over the longer term to continue to improve performance to achieve our vision of pride and excellence in performance at CPS.

Illinois Power's corporate management has designated a new Chief Nuclear Officer (CNO), Walter G. MacFarland, from PECO Energy. He has the responsibility for providing new leadership and achieving improvements in CPS operations. Initially, IP's actions will focus on those activities necessary to support recovery and restart; over the longer term, IP will focus on those activities that will lead to excellence.

This Summary of the Plan for Excellence is presented in two sections:

Recovery/Restart - This section summarizes IP's recovery/restart actions, which are defined as those that are necessary to support safe operations and will be completed prior to resuming operation. This section summarizes the fundamental problems and the broad range of actions that are being taken to return CPS to a level of performance that will provide reasonable assurance of safe startup and operation, including establishment of an appropriate safety culture. Specific performance measures and a restart readiness review process are also described. Additionally, CPS is developing a startup and power ascension plan that will identify hold points during startup and specify self-assessments to be conducted at each point prior to proceeding with further power ascension.

Near Term/Long Term Improvements - This section summarizes IP's near term actions, which are defined as those that IP is planning to initiate and begin showing progress in the near term, but which may be continued through startup. Long term actions are those for which IP is not currently applying resources, and are scheduled and planned for completion after restart. This section summarizes the development and implementation of IP's near term and long term improvements that comprise the Plan for Excellence. These actions form the foundation for continuous improvement with the goal of excellence in operations.

A preliminary Level 1 schedule for Recovery/Restart and Near Term Improvements is attached to this Summary. This schedule is based on the current understanding of the duration of the major aspects of the Plan for Excellence. As plan details are developed and resource loading is accomplished, the schedule will be revised accordingly.

2.0 RECOVERY/RESTART

CPS is taking aggressive actions to deal with the causes of its decline in performance, and to support recovery and restart of the plant. These actions are focused on:

- Strengthening management and leadership
- Ensuring the adequacy of the conduct of operations
- Ensuring an effective corrective action process
- Achieving satisfactory material condition
- Performing a comprehensive review of readiness to restart.

2.1 MANAGEMENT AND LEADERSHIP

Illinois Power has concluded that the overall cause of the decline of operational performance of CPS was weak management. In the past, the management team did not provide adequate leadership and direction, or apply conservative decision-making. The following actions are needed to address these weaknesses:

- Demonstration of an ability to communicate clear goals and expectations, hold personnel accountable, and strive for excellence in operation;
- Encouragement of the identification and resolution of plant problems, and promotion of a questioning attitude;
- Development of a safety culture;
- Prompt correction of equipment problems and deficient plant conditions;
- Effectively implementing change management;
- Development of the technical and supervisory/management capabilities of personnel, and providing a depth of capabilities and industry experience in the management structure; and
- Effective utilization of the capabilities and experience of oversight organizations (e.g., Quality Assurance; Independent Safety Engineering Group, Nuclear Review and Audit Group).

To correct these weaknesses the new CPS management team will lead by example, provide management focus on several key items, strengthen on-site and off-site management oversight, and enhance corporate leadership. Each case is discussed in more detail below.

2.1.1 Leadership - Example

A fundamental approach to achieving improvement in management and organizational performance is to lead by example. This improvement is being implemented through management changes, management forums, management and supervisory training, a management observation program, and use of expert advisors.

- **Management Changes** - Over the past year, a number of new members for the management team have been brought from outside organizations to change management's approach to the operation of CPS. Several of these new managers have been retained as part of a recently instituted management services agreement with PECO Energy Company, and others have been assigned from Institute of Nuclear Power Operations (INPO) or hired from other nuclear power programs. In previous assignments, these individuals have shown a clear understanding of the importance of continuous improvement and striving for excellence. Their previous experiences at well-performing plants provides a foundation for making the important changes in management approach necessary to implement the corrective actions to recover and restart CPS, and to sustain long term improvement. These new managers over the last year are:

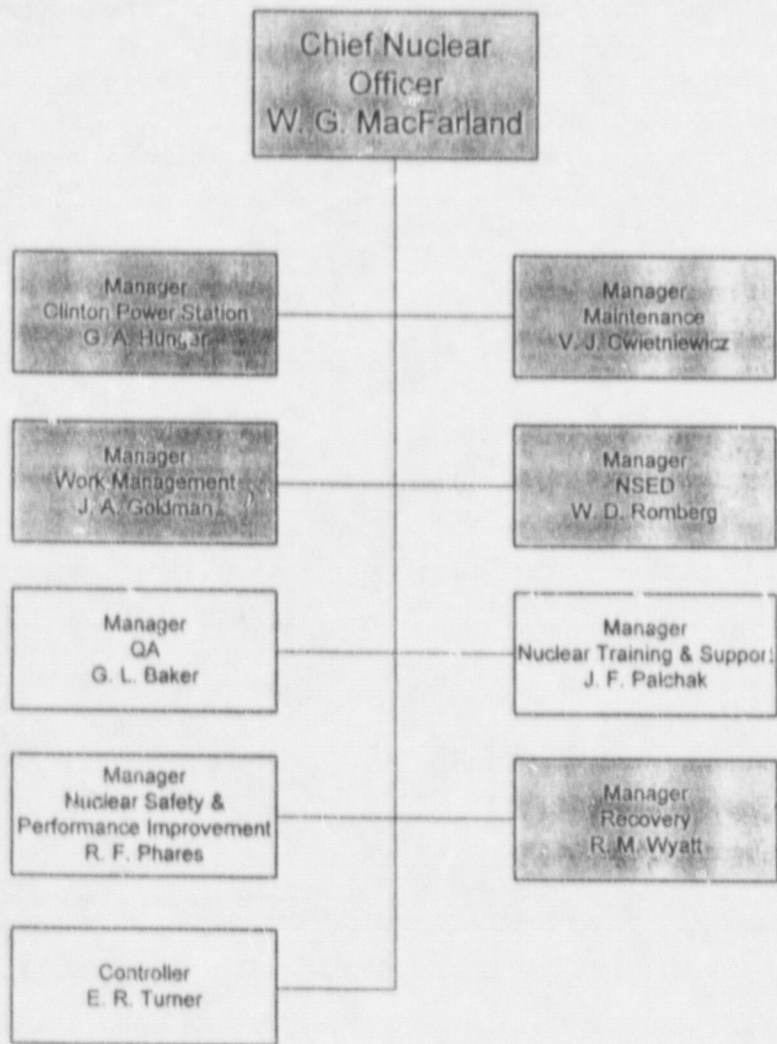
- Chief Nuclear Officer
- Manager, Clinton Power Station
- Manager, Maintenance
- Manager, Work Management
- Manager, Nuclear Station Engineering Department (NSED)
- Manager, Recovery
- Director, Operations
- Director, Design Engineering
- Director, Plant Engineering
- Director, Project Engineering
- Director, Nuclear Training
- Director, Radiation Protection and Chemistry
- Director, Quality Assurance (QA)
- Director, Work Coordination
- Director, Corrective Action
- Supervisor, Operations Services

Supervisor, Electrical Maintenance
Supervisor, Scheduling
Supervisor, Radiological Operations

Figure 1 outlines the new senior management organization.

- **Management Forums** - An effective way to communicate an understanding and appreciation of changes in attitude and expectations is through management and management/worker forums. These forums will be used to communicate and reinforce expectations for formality and a rigorous approach to site activities. This will be accomplished by concentrating the management's attention through forums such as:
 - Leadership Meetings - This daily meeting is attended by managers and directors important to day-to-day plant operations. This meeting also includes other managers and supervisors from operations, maintenance, engineering support, and others as required. The meeting provides a forum for management to demonstrate, by example, and reinforce the attitude and approach expected by CPS senior management. Business conducted during this meeting includes strategic and significant issues and the status of daily plant activities, with a focus on leadership principles that foster safety, defense-in-depth, questioning attitude, and learning from experience (both internal and external).
 - Supervisory Meetings - These weekly meetings are used as a communications forum for management and supervision. These supervisory meetings are conducted as informal meetings during which management expectations are discussed and feedback is provided to management on subjects such as the Plan for Excellence, preventing human errors, and recent events and activities.
 - Senior Management Meetings - These meetings will be chaired by the Chief Nuclear Officer and attended by the managers, directors and key supervisors. These meetings will be used to periodically review those activities that are important to the effective operation of CPS, to monitor status and enforce accountability (including evaluation of performance measures), and to provide a forum for senior management to demonstrate, by example, the attitude and approach of management.

FIGURE 1
CPS ORGANIZATION



Shaded blocks identify new managers from outside IP in the past year.

- Management Review Team Meetings - These are periodic meetings of senior management to review development, implementation and status of the Plan for Excellence. This meeting provides the forum for senior management to reinforce the importance of the Plan for Excellence in improving the overall performance of the station.

- **Management Observation Program** - An aggressive program of in-plant observation by management will be developed and implemented. This program will include a real-time means of measuring behaviors and reinforcing the expectations of management regarding the standards of performance for work. An important element of this program will be the Station Operations Monitoring Program. The purpose of this monitoring program is to improve performance by ensuring management awareness of operating crew values, practices, and behaviors, and providing feedback to the operating crew regarding management expectations.

- **Management and Supervisory Training** - Management Action Response Checklist (MARC) training has been provided to managers, directors, supervisors, and group leaders to establish coaching and counseling practices to be used with their personnel. The MARC techniques will be reinforced to ensure that management and supervisors use these techniques with their staff.

- **Expert Advisors** - A complementary aspect of leadership by example is the use of expert advisors who have extensive experience in the recovery, restart, and performance improvement of nuclear facilities. These advisors are used both as members of review committees and as direct consultants to assist in addressing selected technical and management issues. For example, a former NRC senior manager and member of the Integrated Safety Assessment (ISA) Team is on IP's Senior Advisory Team which is providing independent oversight of the development and implementation of the Plan for Excellence.

2.1.2 Management Focus

As the transition to the new management team proceeds, the Chief Nuclear Officer has directed the management team to focus on the following key items:

- **Safety Culture** – Safety is the top priority. Safety includes nuclear, radiological, and personnel safety. Conservative, safety-conscious decisions will be demanded. Identification of problems will be encouraged and effective correction of problems required.

- Work Execution – Work will be completed safely, efficiently, and on schedule.
- Station Accountability – All personnel are responsible for performing their work in a quality manner, and implementing and complying with programs and procedures. Both successes and failures will be recognized.
- Communication – Everyone on site will be expected to share a common vision of our goals, standards, and expectations. Effective communications will be used and reinforced by management in day-to-day activities.
- Implementation of the Plan for Excellence – This is our roadmap for improvement. Initial focus is on restart and near term activities implemented by the line organization.

2.1.3 On-site and Off-site Management Oversight

An important tool used by management to determine areas of weakness requiring increased attention are on-site and off-site oversight groups. Management commitment to effective use of this tool is essential and will be reinforced by all levels of the management team. Oversight is performed by Quality Assurance (QA), Independent Safety Engineering Group (ISEG), Engineering Assurance (EA) (all on-site), and the Nuclear Review and Audit Group (NRAG) (off-site). As discussed below, a range of activities is being directed at improving the capabilities of on-site and off-site groups including staffing, training and selected process improvements.

In late 1996, NRAG was reconstituted and is now chaired by a former NRC Deputy Executive Director for Operations. Other senior nuclear executives with extensive commercial nuclear operating experience were also assigned to NRAG. NRAG reports have been reformatted to be more hard-hitting and highlight NRAG's findings, and the reports are now being more widely distributed, including directly distributed to the Board of Directors. ISEG will be participating in assessments with peer utilities to improve ISEG report quality, and improve ISEG assessment techniques. Additionally, training will be provided to the ISEG staff in the areas of assessment techniques, writing, communication and root cause analysis. The procedure that describes FRG activities will be enhanced to address participation by the Plant Manager, to specify the meeting responsibility requirements for the FRG Chairman/Alternate Chairman, and to provide guidance for periodic self-assessments.

IP is also making further improvements in the QA department. Technical training will be provided to the QA staff to improve their abilities to perform audits and assessments. QA will be required to conduct follow-up effectiveness reviews and verifications for deficiencies identified by QA. Finally, QA is developing a methodology to improve its depth by planning, implementing, and reporting audits and

assessments by more in-depth review of functional areas and improved technical training for QA personnel. This oversight methodology will provide management with a more complete view of overall site performance.

2.1.4 Corporate Leadership

The Illinois Power Board of Directors is taking a more active role in providing direction to the management of CPS. The Board has retained a consultant with extensive experience as an executive manager of a nuclear utility. This consultant will provide advice and expertise to the Nuclear Oversight Committee (NOC) of the Board of Directors. Additionally, the NOC will periodically hold meetings at CPS and will meet with employees to get input for their assessments. Furthermore, QA and NRAG will periodically be requested to report to the NOC.

Additionally, IP's Chief Executive Officer plans to stay actively involved at CPS, including interacting with the NRC. For example, he has arranged for the CPS QA Manager to provide periodic reports to him, and will be visiting the site more frequently to obtain direct input. Additionally, QA and NRAG will provide independent assessments to the CEO.

2.2 CONDUCT OF OPERATIONS

Problems in the conduct of operations have played a significant role in the overall decline in CPS performance. These problems have included weaknesses in:

- Management oversight
- Procedure use and adherence
- Compliance, interpretation and implementation of Technical Specification requirements
- Conservative decision making
- Work management and scheduling
- Equipment status
- Self-check and self assessment
- Operating practices

Example events that demonstrate these weaknesses include: (1) in April 1996 operators repeatedly used safety relief valves to control reactor pressure following a reactor scram; (2) in September 1996 operators failed to follow procedures in attempting to isolate a reactor recirculation pump seal leak; and (3) in October 1997, the Division II Emergency Diesel Generator (EDG) was tagged out for breaker work while the Division I EDG was degraded and the Division I, II, and III battery chargers were inoperable. Poor

equipment status tracking has also resulting in Technical Specifications equipment being declared operable prematurely.

Prior to restart, CPS will complete actions to address each of these problems and will perform assessments to ensure that these problems have been satisfactorily addressed to support safe restart and operation. These actions will be focused on providing strong leadership, clear standards and expectations, effective procedures and processes, and accountability for performance.

The following actions will be taken prior to restart:

- Assignment of new management within the Operations Department;
- Selection of five Operations Shift Manager positions to provide Operations leadership in site activities. The Shift Managers will play a central role in assessing operating crew performance relative to the Conduct of Operations procedure;
- Reinforcement by Operations Management of expectations for safety (nuclear, radiological, and industrial), procedure use and adherence, conservative decision making, effective communications, self-checking and peer checking, professional operator attributes, and supervisory performance. An assessment tool will be developed to track performance relative to these focus areas, and Operations continuing training will reinforce these focus areas. These actions are in addition to site-wide actions to improve procedure compliance, including continuing training and seminars;
- Management oversight of crew performance will be provided to ensure Operations activities are performed with focus on the attributes of safe and conservative operation. The Plant Manager and Director - Operations will play a key role in providing feedback to the crews on performance. Periodic use of senior, licensed personnel from the industry will ensure the feedback on crew performance is sufficiently critical relative to industry practices.
- Establishment of an Experience Assessment Group to capture internal experience and industry experience to support improved performance;
- Developing an effective equipment status tracking system to ensure proper control of Technical Specification actions and appropriate declaration of equipment operability;
- Emphasis in Licensed Operator continuing training on Technical Specifications practical application exercises. Technical Specifications bases will be reviewed to reinforce the basis for limiting

conditions of operation and the philosophy that Technical Specifications provide the minimum required margins for safe operation. Lessons from previously identified weaknesses will be incorporated;

- Establish an Operations Services Group that focuses on work management activities providing an operations focus in the development of work schedules. The Operations Services Group will interface with the Work Management Group to ensure Operations takes a leadership role assessing the safety significance of all work activities;
- Using previously licensed individuals to augment the Work Control Organization to assist in developing and improving the quality of the planning process and the work schedule;
- Improvement in the schedule risk assessment process and tools, including clarification of management's expectation on the threshold for contingency planning, communication of risks of planned and emergent risks, and training of Operations and Work Management personnel involved in schedule risk assessments.
- Use of a performance planning and appraisal system to guide personnel performance goals and objectives. Performance appraisal goals will be tied to Operations focus areas;
- Completion of Management Action Response Checklist (MARC) training, and establishment and communication of expectations clearly defining its use, to strengthen supervisory skills;
- Selective recruitment of new Equipment Operators in support of progression planning to continue licensed training programs. This commitment will be continued to provide for sufficient depth and talent in the Operations Department;
- Development of performance measures to track Operations performance with respect to the Operations focus areas. Training will provide progress reports on continuing training, especially with respect to Technical Specifications training.

2.3 CORRECTIVE ACTION

Assessments such as the Integrated Safety Assessment (ISA) and the NRC Special Evaluation Team (SET) have found the Corrective Action Program at CPS to be ineffective. The ISA concluded that CPS management had not taken "ownership" of the program, including not providing interaction and oversight, or providing direction toward process improvement. The SET found that inconsistent problem

identification and ineffective evaluation and corrective actions were one of the root causes of CPS' declining performance. The performance of the Corrective Action Program was also the subject of a 50.54(f) Demand for Information (DFI) from the NRC. Among the causes of this performance, as identified by CPS, were a lack of sufficient management ownership and involvement in the corrective action process. In addition, management did not recognize the value of a strong corrective action program, and there were poorly defined expectations and accountability in this area. Finally, root cause and problem analysis were inadequate and corrective actions were not sufficient to prevent recurrence. These deficiencies allowed the problem identification, cause evaluation, and corrective action steps to be less rigorous and less conservative than required of a well-performing nuclear plant.

To remedy the deficiencies and to ensure the effectiveness of corrective actions, CPS will complete several actions prior to restart. These actions will enhance the ability to pro-actively identify, rigorously assess, and follow up to correct problems and prevent their recurrence. Additionally, the process will require follow-up to ensure corrective actions are effective in addressing identified problems.

- Principal among these actions is the focus on safety culture at all levels in the organization as discussed above. A policy statement will be issued and discussed with site personnel to provide clearly stated values and expectations of performance and accountability for corrective actions.
- Expectations and accountability for identification, analysis, and rigorous correction of problems will be reinforced by communications and feedback through periodic assessments of program effectiveness.
- Problem resolution will be enhanced through improvements in trend analyses and the identification of root cause and apparent causes.
- Communications and training will be used to keep expectations visible and provide knowledge of program actions.
- Changes have already been made to enhance the CPS corrective action process. These include emphasizing the need to report human performance errors, establishing an Event Response Team, establishing four levels of significance of conditions and requiring a graded approach to cause analysis and investigation; time limits commensurate with the level of significance, requiring reviews of the effectiveness of the corrective actions for conditions in the top two levels of significance, and requiring corrective action for significant conditions to be approved at the manager level.
- Additional training is being developed and will be provided to make the implementation of the processes more effective and support further improvement. These include Root Cause Basics,

Advanced Root Cause, Equipment Root Cause, and Abbreviated Equipment Root Cause for Maintenance personnel.

- A review of a selected set of condition reports, for which corrective actions have been taken, will be conducted to assess whether past corrective actions have been effectively implemented. For example, IP has initiated a System Design and Functional Validation (SDFV) program, which includes evaluation of the effectiveness of past corrective actions that could affect functional capabilities for representative systems important to safe and reliable operation. Additionally, the Corrective Action Group will review selected maintenance work requests to determine whether they have deficiencies that have not been properly entered into the CPS Corrective Action Program.
- Methods are being established to measure the effectiveness of overall improvements in corrective actions.

These actions will resolve a number of deficiencies in the CPS Corrective Action Program and sufficiently enhance its ability to pro-actively identify, rigorously assess, and provide lasting resolution of problems to support safe restart and operation.

2.4 MATERIAL CONDITION

Degradation of material condition at CPS has been indicated by recurring and long-standing material deficiencies, numerous main control room deficiencies, operator workarounds, and a large maintenance backlog. In addition, the backlog of corrective maintenance items are contributing to degraded material condition. Further, poor maintenance practices have adversely affected some equipment. Additionally, correction of plant material condition problems has not consistently been timely and effective, and cause determinations have often been narrowly focused and inadequate, resulting in recurrence of problems.

The following actions will be completed prior to restart to correct known material condition deficiencies; to provide reasonable assurance that structures, systems, and components are able to perform their safety functions; and to verify the adequacy of past maintenance activities.

Material Condition Deficiencies

The following actions have been or are being taken to correct known material condition deficiencies:

- Over 500 main control room (MCR) deficiencies have been corrected during the current outage. However, the backlog of MCR deficiencies has recently increased substantially. The focus of CPS, with leadership from the newly created Work Management Department, is to work off this backlog and to implement a process which will ensure that the backlog is maintained at acceptable levels.
- Several significant material condition problems have been resolved during the current outage. For example, the feedwater check valves have been redesigned and reworked; improvements and repairs to the drywell floor and equipment leak drain detection systems have been made; a large number safety related and selected other electrical breakers have been inspected, tested, and refurbished; neon lights on the control room panels have been re-wired; and an extensive modification of the turbine generator assembly has been performed.
- Several material condition and design-related problems are being addressed currently, including: reactor recirculation pump seal performance; service water heat exchanger degradation; circuit breaker problems; potentially degraded off-site voltage supply; thermo-lag fire barriers; the potential for hot shorts on valves during fires; control rod drive ASCO solenoid valves; logic system functional testing; correction of overgreasing of 480 volt motors; inverter failure; and verification of the safe shutdown analysis for fires.
- The maintenance work request (MWR) backlog is being reviewed and priorities assigned. Goals will be established for the backlog. The backlog will be reduced through more effective use of the Fix It Now (FIN) process and improvements to maintenance work packages. Additionally, the work management program is being changed to improve the prioritization, planning and scheduling of work for the station. This will be an integrated process which will require the entire CPS organization to participate for it to succeed.
- The Preventive Maintenance (PM) deferral process will be assessed to ensure that thorough technical evaluations of deferrals occur in a timely manner to support equipment operability and performance.
- Corrective Actions are being taken to address QA audit findings related to compliance with the Maintenance Rule.

System Design and Functional Validation

A System Design and Functional Validation (SDFV) program is being performed for representative systems. The purpose of the SDFV is to assess conformance with the design and licensing basis

functions. If the results suggest other systems may be functionally degraded due to design or representative material condition, the size of the review scope will be increased.

Adequacy of Past Maintenance Practices

Past maintenance practices (including "skills of the craft") contributed to some material condition deficiencies (e.g., over-greasing of motor bearings; soldering techniques used in repair of control room neon light indicators; failure to lubricate electrical contacts in 4160 volt and other breakers). To determine whether other maintenance practices currently impact equipment performance, IP is taking the following actions:

- A review is being performed to determine past maintenance practices that could have an adverse impact on the performance of safety functions of equipment. As part of this review, a maintenance self-assessment has identified a list of maintenance work practices. These practices are being evaluated to determine whether they potentially could contribute to an equipment performance problem.
- Approaches to determining the effect of past maintenance practices are being considered, including interviews with maintenance personnel; review of maintenance procedures; observation of maintenance personnel work by experienced maintenance personnel from other nuclear facilities; and selected testing of "skills of the craft" and refresher training.

Appropriate corrective actions will be taken if adverse impacts are identified.

2.5 RESTART READINESS REVIEW

Prior to startup, CPS management will perform Restart Readiness Reviews to ensure that the plant's material condition, its organizations, and its programs are prepared to support safe operations. The following summarizes the scope of the Restart Readiness Reviews that will be performed. Section 4.0 provides a more detailed description of these readiness reviews.

Establishing Restart Criteria – Conditions, issues and deficiencies which, if uncorrected, could reasonably result in the plant being in an unsafe condition or inoperable under the Technical Specifications will be corrected prior to restart. IP has established ten criteria to assist CPS personnel in making this determination. These criteria are provided in Table 4.1. These criteria establish consistent management expectations across the site. Deficiencies for which sufficient compensatory measures are

implemented such that the plant is and remains in a safe and operable condition may be corrected after restart, on a schedule commensurate with the potential safety significance and the work management process.

Hardware and Design Readiness Reviews -- These activities will ensure that the physical plant is ready to support safe startup and operations. These activities will consist of the following:

- Known hardware and design problems will be addressed before restart.

- The System Design and Functional Validation (SDFV) program is reviewing five systems and two design areas to demonstrate functional performance consistent with the design and license basis. The program is:
 1. Evaluating the accuracy, consistency, and integrity of the design and licensing basis documentation as it defines the functional requirements for systems, structures, and components (SSC) important to safe and reliable operations,
 2. Confirming that requirements for identified functions have been accurately translated into the Technical Specifications, and operating, abnormal, emergency and surveillance procedures.
 3. Verifying that the test methods and results of surveillance and test procedures are sufficient to confirm system functionality.

Systems chosen as representative for the station are: auxiliary power (AP), shutdown service water (SX), residual heat removal (RH), control room ventilation (VC), and containment monitoring (CM). Two areas of design changes are being reviewed: leak detection and structural modifications. These systems and areas were chosen to encompass representative safety functions (reactor shutdown, post shutdown decay heat removal, positive reactor pressure vessel pressure boundary isolation and MCR habitability post accident) and a representative spectrum of system type, designer, and topical area application. Configuration walkdowns of portions of these systems will be performed to provide visual verification that the actual physical configuration is as depicted on approved CPS drawings. The results of the SDFV reviews for the selected systems will provide a basis to evaluate whether there is reasonable assurance that other systems can function consistent with their design and licensing basis. These activities are being coordinated with others described under "Material Condition".

- Reviews are being performed of the potential impact on plant equipment by corrective and preventive maintenance, and corrective action program activities.

- System readiness reviews will be performed. System engineers and individuals with operations experience will walk down their systems to ensure that each is ready to support safe operations. Additionally, system engineers will analyze open items on their systems to identify items that must be corrected prior to restart, and will analyze items on their systems since January 1, 1995 to identify any trends.

Organizational Readiness Reviews -- Managers will critically assess their departments to ensure that their staff understand their roles and responsibilities, and that the departments are properly staffed and organized to support restarting the plant. Workloads, backlogs, and the status of qualifications and training will be assessed to determine whether the organizations are prepared. Additionally, managers will evaluate: 1) open items to determine which could impact safe restart, 2) open and closed items since January 1, 1995 to identify any adverse trends, and 3) closed significant weaknesses to ensure the adequacy of corrective action for them. Processes owned by departments will be reviewed for adequate tools, facilities, resources, and administrative process. Performance, including established and understood performance expectations, will be evaluated such that there is confidence that each organization is ready for safe operations.

Program Readiness Reviews -- An initial screen of CPS programs which could affect safe operations is complete. Some programs do not impact safe startup and operation, and improvements in other programs are included in the Plan for Excellence. For the remaining programs, owners will evaluate 1) open items to determine which could impact safe restart 2) open and closed items since January 1, 1995 to identify adverse trends, and 3) closed significant weaknesses to ensure the adequacy of corrective action for them. Issues that have not been properly resolved will be evaluated against the restart criteria as potential restart activities. Additionally, programs will be reviewed to ensure that they comply with applicable requirements and contain provisions essential for safe startup and operation.

Performance Measures -- Performance measures and goals are being established to assess performance for plant restart and for continuous improvement. The goals will be met before restart or justification will be provided for not meeting the goals.

Readiness Affirmations -- After the above reviews are completed and corrective actions taken for the plant, organizations and programs, owners will affirm in writing that their departments, programs, and systems are ready to support unit restart and power operations. Licensing and the Quality Assurance departments will also provide affirmation. The readiness assessments and these statements will be

reviewed by site management before the recommendation to restart the plant is made to the Chief Nuclear Officer who will make the final decision on restart for Illinois Power.

2.6 PERFORMANCE MEASURES

IP is establishing performance measures to help assess the effectiveness of its corrective actions and improvements in performance. The more important performance measures that will be used by CPS are listed below. Some of these indicators are current Nuclear Program Performance Indicators while others have not been developed at CPS. The indicators are divided into categories which correspond to IP's strategies for improvement in the Plan for Excellence. These indicators pertain to pre-restart activities, and additional or different indicators may be developed for operation of CPS. Additionally, IP is developing goals for these indicators.

A. Management, Supervision and Oversight:

1. Station Early Warning Indicator (composite of twenty five selected indicators)
2. Number of QA Audit Findings Issued during period
3. Audit Finding Aging and Number Overdue
4. Condition Report Corrective Actions Past Due (Not a current indicator)

B. People:

1. Personnel Contaminations
2. Overtime Hours by CPS Department
3. Number of Long-Term Contractors vs approved staffing level
4. Illinois Power Staffing vs approved staffing level

C. Operational Excellence:

1. Station Operations Monitoring Program Indicator (Not a current indicator)
2. Surveillance Tests Late and Overdue (Not a current indicator)
3. Main Control Room Deficiencies
4. Operator Workarounds
5. Zero Liquid Effluent Discharge
6. Event Free Performance
7. Human Performance Licensee Event Reports

D. Programs and Processes:

1. Fire Protection Impairments
2. Number of Temporary Modifications and Aging

3. Contaminated Surface Area
4. Procedure Change Status
5. Number of Temporary Procedure Changes (TPDs) and Procedure Changes for Revision (PDRs)
6. Radiation Exposure Station and Department (WANO)
7. Low Level Solid RadWaste Volume (WANO)
8. OSHA Recordable Accidents
9. Radiation Protection Program Violations (Not a current indicator)
10. Percent Rework

E. Plant Equipment Performance

1. Preventive Maintenance Late and Overdue
2. Open Outage Corrective Maintenance Work Requests
3. Open Non-Outage Corrective Maintenance Work Requests
4. Open Non-Outage Corrective Maintenance Work Requests Greater than 12 Months Old
5. Percent Post Maintenance Testing Failures
6. Key Safety Equipment Unavailability Hours
7. Forced Outages for repeat causes

3.0 NEAR TERM/LONG TERM IMPROVEMENTS

The Plan for Excellence describes strategies to achieve IP's vision of pride and excellence in nuclear generation at CPS. These strategies and their associated elements are shown in Figure 2. Actions to accomplish these strategies have been prioritized as either startup related (discussed in the previous section), near term, or long term. The more important near term and long term actions are summarized below.

STRATEGY 1: MANAGEMENT, SUPERVISION, AND OVERSIGHT

The objective of this strategy is to achieve excellence in leadership, management and supervision, teamwork, and independent oversight.

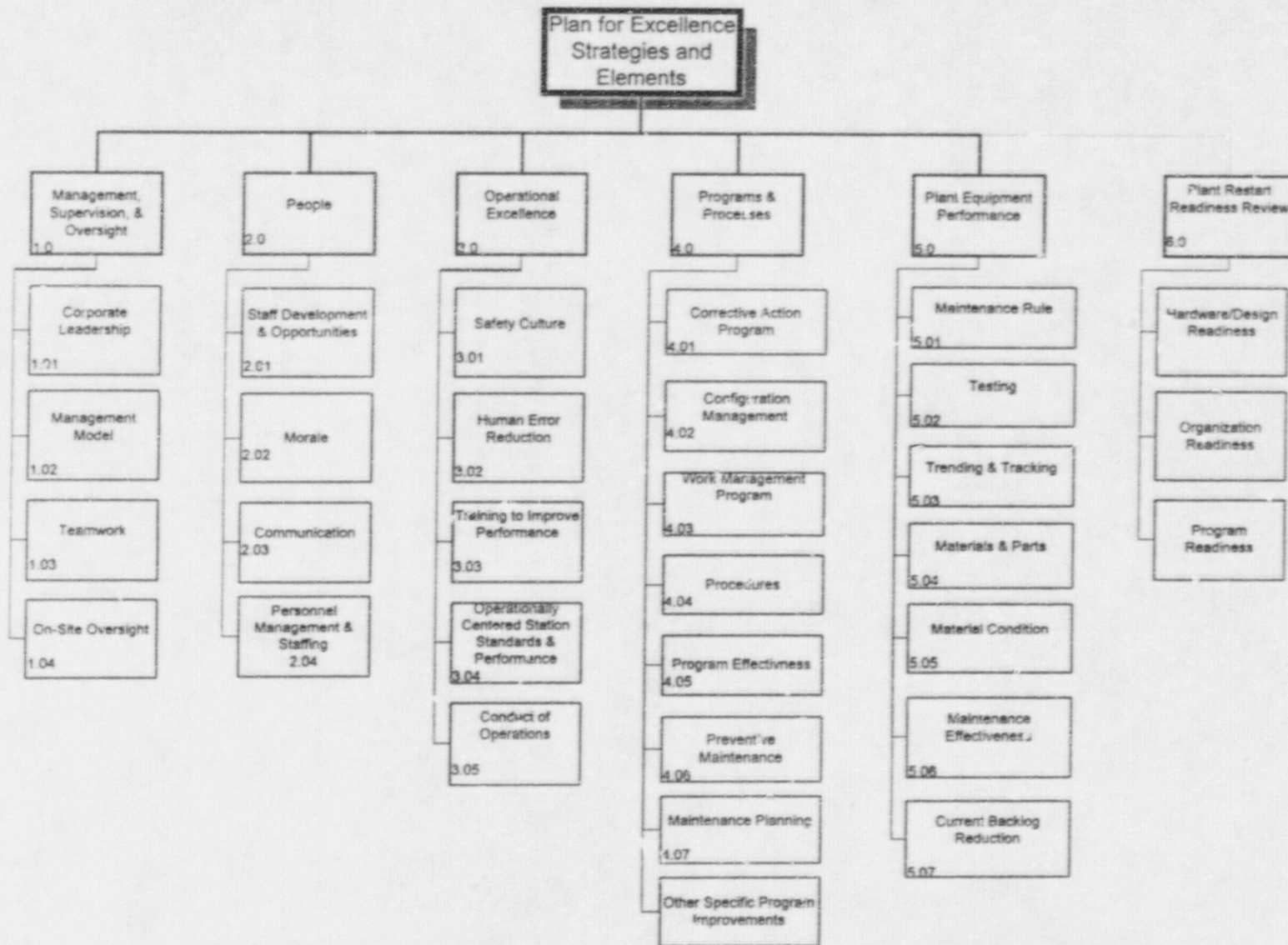
Near Term Actions

1. Management and Supervision

The expectation will be established that management and supervisory personnel PLAN their activities, DO what they plan, MONITOR the results, and ADJUST their activities as needed to achieve the desired results. Training will be provided to management and supervisory personnel on this expectation. Individual management and supervisory personnel will be evaluated to identify their particular strengths and areas for improvement, and Individual Development Plans will be prepared to improve performance. Management and supervisory personnel will receive regular performance appraisals that include assessments of their effectiveness.

A leadership development training program will be established. This program will provide initial as well as continuing training on leadership development. Candidates for leadership positions will be identified and given development training to augment their abilities.

FIGURE 2
 PLAN FOR EXCELLENCE STRATEGIES AND ELEMENTS



2. Improvements in Teamwork

The process of development of the Plan for Excellence has been designed to help instill teamwork at CPS. Actions for many of the Elements in the Plan were developed by inter-department teams of employees, and input for the actions for other Elements was provided by focus groups of CPS employees. IP is building upon this successful teamwork.

Expectations for teamwork will be established, including identification of behavioral standards for facilitating teamwork (such as keeping the interest of CPS ahead of personal or department interests, seeking help from other groups when needed, and offering assistance to other groups). These standards will be communicated to the workforce. Additionally, site personnel will be educated on the subject of teamwork, and CPS employees will be trained to develop their abilities to work within a team.

STRATEGY 2: PEOPLE

The objective of this strategy is to improve personnel development, communications and morale, and experience of CPS staff and management.

Near Term Actions

1. Personnel Management, Staff Development, and Performance Appraisals

Regular performance appraisals will be provided to CPS employees, and the performance appraisals will be structured so that personnel are evaluated according to basic behavior characteristics. Based upon the results of the performance appraisals and input from Full Circle Feedback evaluations, each salaried non-union employee will have an individual development plan.

IP will ensure that a sufficient pool of personnel are ready for future management needs by establishing and implementing succession plans for each department. These plans will include a roster of employees who aspire to be in key positions, their qualifications for the positions, and actions to achieve the needed experience and qualifications for the positions. If experienced IP

employees are not available for a position, IP will recruit experienced personnel from outside of IP.

2. Communications and Morale

Communications are a critical facet of successful nuclear plant operations. Consequently, IP has begun a site-wide examination of CPS communications processes and has initiated the development of a strategic communications improvement program. IP will adjust its processes to remove obstacles to good communications practices and enhance those which result in proper information flow. Expectations will be established regarding management-supervisor-employee communications, especially the fact that such communications must be two-way. Employees will be kept aware of site activities, policies, decisions and lessons-learned, including adequate back shift and weekend work updates, allocation of contractor resources, staffing, and status of the Plan for Excellence.

Morale will be improved by ensuring that CPS employees are better aware of the activities occurring at the site, including the status and progress of the Plan for Excellence. The frequency of employee communications will be increased by arranging a system of periodic meetings for personnel in various groups and departments throughout the organization and re-establishing programs similar to the Front Line Communications program. IP will also address employee concerns about how contractor resources are being allocated and administered, and how open IP positions are being staffed.

3. Staffing

Supervisor positions have been re-established in Engineering. Additionally, staffing has been increased in Engineering and Maintenance.

Staffing in Operations is also being increased, including the recent completion of an initial operator license training class. Additionally, another class is being initiated, and an Operations Department Staffing Plan has been established with a goal of providing sufficient licensed personnel to staff six shifts.

Finally, IP is replacing contractors who occupy management positions in the CPS organization with permanent CPS personnel. Similarly, IP is developing its personnel to fill positions held by contractors who have specialized skills.

Long Term Actions

IP will renew and enhance the use of job rotations to build organizational bench strength, increase lateral integration, and to mitigate the "stuck in my job" frustration noted by many employees. IP will ensure that staffing levels will be maintained at adequate levels to allow rotational and job growth opportunities.

STRATEGY 3: OPERATIONAL EXCELLENCE

The goal of this strategy is to enhance our safety culture, reduce human errors, improve performance through training, develop operationally centered station standards and performance, and improve the conduct of operations.

Near Term Actions

1. Safety Culture

Management will continuously reinforce its expectations on safety, including nuclear, radiological and personnel safety. In particular, work group meetings led by Directors, Supervisors and Group Leaders will discuss examples of good and poor behaviors within their work groups. Explanations of defense-in-depth and safety barriers will be incorporated into pre-job briefs, and training will be given to supervisors to develop, monitor, and communicate performance standards. As discussed elsewhere in this summary, IP is taking steps to improve corrective actions to help transform CPS into a learning organization that strives for continuous improvement. Training and seminars will be conducted for employees to reinforce expectations for procedure compliance and conservative decision making. Expectations and guidance will be established for self-assessments based on best industry practices, which will include techniques and methods for assessments and a self-critical questioning attitude. Finally, IP will provide site-wide leading indicators to identify declining trends, compare CPS to industry top performers, and assess achievement of site and departmental goals.

2. Human Error Reduction (H.E.R.)

The CNO will sponsor a site-wide H.E.R. program. IP is establishing an Experience Assessment Group, whose responsibilities will include the H.E.R. program. The H.E.R. program at CPS will be

benchmarked against industry top performers. Furthermore, human error reduction techniques will be communicated through handbooks and pocket cards to increase H.E.R. visibility at the site. Performance indicators specific to CPS will be used to monitor and adjust the H.E.R. program for continuous improvement.

In addition to established self-checking techniques such as "STAR" (Stop, Think, Act, Review), IP will use co-worker coaching techniques to help workers reduce errors. Tools will be provided to supervision and management to enable them to reduce their errors and to monitor and correct human errors by their staff. H.E.R. techniques will be incorporated into site training and qualifications programs. Personnel who work at CPS will receive H.E.R. training, including managers, directors, and supervisors.

3. Training

A team of CPS employees has been established to identify actions to improve training.

Long Term Actions

1. Conduct of Operations

In addition to the pre-restart actions to improve the conduct of operations, IP will take a number of long term actions to improve the conduct of operations, including 1) improvements in the effectiveness of the turnover process so that continuity of information is maintained between shifts and between individual watch stations, 2) implementation of a new database program for tracking operability restraints and required actions, 3) obtaining software for logging and tracking equipment status, and 4) creating and validating a master database of label/source information and upgrading labeling in the field to be consistent with this database.

STRATEGY 4: PROGRAMS AND PROCESSES

The objective of this strategy is to improve station programs and processes.

Near Term Actions

1. Corrective Actions

In addition to the pre-restart improvements for corrective actions discussed in Section 2.3, IP is taking near term actions to establish and implement a comprehensive and integrated corrective action program. Corrective Action process changes will be made by revision of procedures covering self-assessment, condition reporting, operating experience, critiques, and maintenance work requests.

Additionally, IP is making improvements in the industry operating experience program. This program will be provided with resources and management oversight so that IP can readily integrate industry information into the Corrective Action Program, including development of a mechanism for retrieving and disseminating internal/external operating experience. An Experience Assessment Group is being established to run this program, including capturing internal and external industry experience to support improved performance.

2. Configuration Management

IP is taking the following actions to improve configuration management:

Upgrading the CPS Set Point Program - With assistance from industry experts, a self-assessment of the Set Point Program will be performed, including comparing the CPS program against programs that the industry and the NRC consider to be excellent. Based upon the results of this self-assessment, a long-range plan for enhancements will be prepared in the CPS Set Point Program.

Defining the Current Licensing Basis/Validating the Updated Safety Analysis Report (USAR) - A review of the USAR will be done. Information in the USAR will be validated and corrected as needed. Additionally, the process for updating the USAR will be evaluated and improved. Commitments and other documents included in the current licensing basis will be identified and consolidated into a single, retrievable source.

Updating Vendor Technical Documents - IP is reviewing and revising vendor manuals to develop a consistent and uniform format, to incorporate the most current revision of vendor technical documents, and to make the vendor contacts required by Generic Letter 83-28. Additionally, the

Master Equipment List (MEL) is being updated with the most current vendor information. To ensure that future changes to vendor technical documents are properly incorporated into vendor manuals and MEL, CPS is revising its process for control of vendor technical documents.

3. New Work Management Process

IP will critically assess and improve its work management process, procedures, and organization. New scheduling software will be implemented and requisite training will be provided to appropriate CPS personnel. IP will also streamline the work processes, including using task managers for major or critical work, developing a program to expedite minor maintenance, and increasing the use of the Fix It Now Team (FIN) for emergent work.

IP is working to improve the content of work packages by 1) evaluating the MWR planning process at top performing nuclear power plants to identify improvements for the process at CPS, 2) establishing a document which provides standardized planning of job steps contained within MWRs, PMs, and plant modification packages, and 3) revising the procedure on preparation of maintenance work documents to streamline the work package content and make the review process more effective.

4. Procedures

IP will review and revise the abnormal operations sections of operations procedures to ensure that conservative approaches for dealing with abnormal conditions are clear from a human factors perspective. Additionally, the technical adequacy of future procedure issuances and revisions will be enhanced by the following changes:

- Owners from line management will be assigned to each procedure, and will be trained in their responsibility for ensuring the adequacy of their procedures.
- Responsibilities for Independent Technical Reviewers (ITRs) of procedures will be clarified, and ITRs will be given additional training on their responsibilities for ensuring high quality procedures.
- System engineers will review appropriate revisions to system operating procedures to ensure their compliance with upper tier documents and the design basis.
- Procedures requiring periodic review will be identified, the scope of the reviews will be defined, and resolution of open items against the procedures will be required.

- Procedures will be reviewed to ensure they complement and are consistent with the knowledge and skills of workers.
- The CPS Writers' Guide will be revised to include human factors/error reduction techniques.

IP is also making changes to enhance the procedure change process. The procedure change process at top performing plants will be reviewed to benchmark the process at CPS, and changes will be made to the CPS process to streamline the procedure approval process. IP is also taking action to reduce the total backlog of Comment Control Forms (CCFs) on procedures, and will require procedure owners to review and prioritize CCFs to discourage inappropriate procedure changes.

Long Term Actions

1. Corrective Actions

IP will continue to improve a comprehensive and integrated corrective action program. This will include a single site-wide system for identifying and tracking correction of conditions adverse to quality. Finally, periodic self-assessments will be performed to ensure that the goals of the Corrective Action Program are being implemented.

2. Configuration Management

The long term actions to improve configuration management include the following:

Collecting and Collating Design Basis Documents. Currently, the design basis for CPS is contained in numerous documents and is not easily retrievable. To achieve excellence, IP will collect, collate and index the design basis.

Enhancing the Availability of Nuclear Steam Supply System (NSSS) Design Documents. IP will define the types of NSSS documents that should be held at CPS, obtain copies of those documents that are not currently on site, and integrate and store those documents with other CPS design documents.

Supervisor of Radiological Operations from another utility who has experience in supervising a corrective action program as well as extensive RP knowledge.

STRATEGY 5: PLANT EQUIPMENT PERFORMANCE

The objective of this strategy is to maintain good material condition, and to ensure safe operation, equipment reliability, and system operability.

Near Term Actions

1. Maintenance Rule Program Enhancements

The plans to improve implementation of the Maintenance Rule include: 1) expanding the level of detail of functions covered by the Maintenance Rule, 2) establishing a single program to control unavailability time of equipment and 3) providing general and department-specific training on the Maintenance Rule.

2. Testing

A team of CPS employees has been established to identify actions to improve testing.

3. System Engineering Program

Some actions have already been taken to improve the system engineering function and reduce the burdens on system engineers, such as:

- Re-establishment of a Performance Monitoring Group in Plant Engineering;
- Revision of department policy to no longer require preparation of design changes by system engineers;
- Establishment of engineering response teams to address a large number of emergent issues, and;

- Revision of CPS procedures to define the role of System Engineers.

A team of CPS employees has been established to identify additional actions to improve system engineering, including trending and tracking of material conditions.

4. **Maintenance Effectiveness**

A team of CPS employees has been established to identify actions to improve the effectiveness of maintenance. This will include actions to address issues related to "skills of the craft."

4.0 RESTART READINESS REVIEWS

4.1 SUMMARY OF PROCESS

As part of our ongoing self-assessment activities, we will conduct readiness reviews to ensure plant equipment, organizations, and programs are prepared to support safe startup and operations.

The Restart Readiness Review identifies three types of readiness reviews: 1) hardware/design readiness reviews; 2) organizational readiness reviews; and 3) program readiness reviews. These reviews are described in Sections 4.2 to 4.4 below. As described in these sections, these reviews will include verifications and other activities needed to address the NRC's Confirmatory Action Letter (CAL) dated August 6, 1997, and its Demand for Information (DFI) Letter dated September 26, 1997. To avoid duplication, the readiness reviews will take credit for those portions of the Plan for Excellence for improvement that will be completed prior to startup, and may identify the need for additional improvements to be incorporated into the Plan. Additionally, our Restart Readiness Review Plan includes requirements to establish performance measures (Section 4.5) and requirements for final affirmation of readiness to restart (Section 4.6).

In developing these readiness reviews, IP used as a baseline the plan for the readiness reviews that was implemented at CPS in the Spring of 1997 (which was similar to readiness reviews conducted at other nuclear plants). Reviews were added to account for the events occurring after Spring (including verifications to account for the CAL, DFI, and the results of the ISA and SET). IP also added provisions, such as the affirmation process, to provide more rigor to the readiness reviews.

In general, readiness reviews will be conducted by individuals or departments responsible for the hardware/design, organization, or program in question (the owner). Each owner will prepare an approved restart readiness implementing plan for conducting his/her hardware/design, organization, and program review, which will be provided for approval to the Management Review Team (MRT). Wherever possible, owners should utilize the output from other Plan for Excellence Action Teams as input for their implementing plans. The Recovery Manager will conduct periodic reviews with the responsible line managers, and will establish a team to help him evaluate the implementation and results of the readiness reviews.

The results of the restart readiness reviews will be compared against pre-established Restart Criteria provided in Table 4.1. These criteria are designed to ensure any conditions determined to adversely affect the safety of startup and operation of CPS are corrected prior to restarting the plant. Using these criteria, hardware/design, organization, and program owners will prepare a list of conditions that must be corrected prior to restart, and this list will be provided to the Management Review Team for approval. These conditions will be tracked to completion. After completion of the readiness reviews and prior to startup, new issues may emerge. Owners will maintain an awareness of emerging issues within their scope of responsibility, and will evaluate the issues using the Restart Criteria in Table 4.1. Any issues that meet the criteria will be added to the restart list and tracked to completion. Non-restart items will be prioritized and scheduled for completion independently of restart.

The Quality Assurance Department will provide independent oversight of the restart readiness review process and results through audits and assessments. In addition, a Senior Advisory Team (SAT) has been established to conduct an independent technical assessment of the readiness reviews. The SAT consists of experienced industry and CPS personnel. Additionally, the Nuclear Review and Audit Group (NRAG) will conduct an assessment of the restart readiness reviews. The SAT and NRAG reviews will be conducted prior to the Chief Nuclear Officer decision to restart.

For each element of the restart readiness review, the element owner will present both an implementing plan for approval and a report (including an oral presentation to the MRT as requested) of the results of the review to the Plant Manager and the MRT. The MRT will approve the implementing plans, review and approve the results of the readiness review reports, and issue a final affirmation and recommendation to the Chief Nuclear Officer regarding readiness to restart. The SAT and NRAG will independently assess MRT results. Based upon the recommendations by the MRT, the Chief Nuclear Officer will make a decision on whether CPS is ready to restart.

A simplified flow diagram of the restart readiness review process is provided in Figure 3.

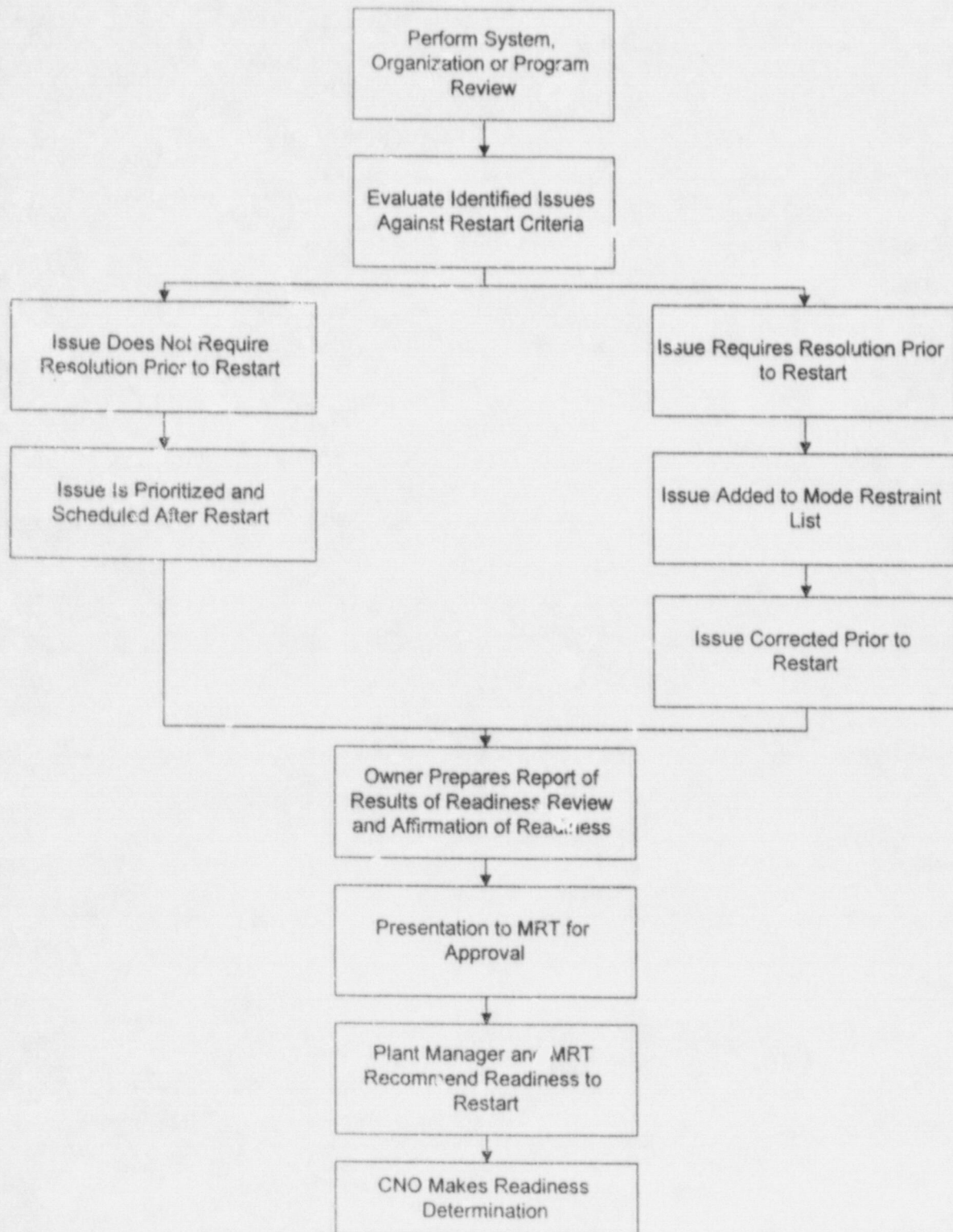
Table 4.1

Restart Criteria

Conditions, issues and deficiencies which, if uncorrected, could reasonably result in the plant being in an unsafe condition or inoperable under the Technical Specifications must be corrected prior to restart. Conditions, issues, and deficiencies for which sufficient compensatory measures are implemented such that the plant is in a safe and operable condition may be corrected post-restart on a schedule commensurate with their safety significance and established work management processes. The following factors will be taken into consideration in determining which conditions must be corrected prior to restart.

- 1.0 Is resolution of the issue required to address a nuclear safety, personnel safety or operability issue?
- 2.0 Does the condition create a potential excessive personnel radiation exposure, an unplanned radioactivity release to the environment, or a discharge of effluent in excess of regulatory limits?
- 3.0 Is action required to eliminate or mitigate a predictable component failure, deficiency, condition, or operator work around that could result in an operational failure, entry into a Limiting Condition for Operation (LCO), or challenge performance of system functions important to safe and reliable operation?
- 4.0 Is there action which must be taken in order to resolve a deficiency or condition that could result in a failure of, or the inability to satisfy, a required surveillance test?
- 5.0 Is there a need to resolve identified procedural deficiencies:
 - a. That affect the adequacy or validity of required Surveillances, or
 - b. That have resulted in repetitive work around situations, or
 - c. That challenge the ability of a system to perform functions important to safe and reliable operation, or
 - d. That render important programs or processes ineffective.
- 6.0 Is there a need to take action which will restore degraded critical components or correct conditions that could result in a plant transient, unscheduled load reduction, or shutdown?
- 7.0 Has the condition(s) resulted in repetitive equipment failures?
- 8.0 Does the condition result in a licensing or design basis discrepancy in safety related or other Technical Specification required equipment and/or substantive licensing and design basis document discrepancies? (Note: documentation deficiencies that have no safety impact may be completed as non-restart action items).
- 9.0 Does the condition result in a cumulative deficiency, backlog or condition that, in aggregate, could have significant negative impact on nuclear or personnel safety, operability or reliable plant operation? (Note: this factor is not applicable to individual work items.)
- 10.0 Does the condition result in organizational, training, programmatic or process deficiencies that in aggregate have reasonable probabilities of affecting safe and reliable plant operation?

Figure 3
Restart Readiness Review Process



4.2 HARDWARE/DESIGN READINESS REVIEWS

The purpose of the hardware/design readiness reviews is to ensure the readiness of the plant to restart and operate safely.

Our hardware/design readiness reviews will consist of three parts: 1) correction of known problems, 2) verification that other hardware/designs do not have similar problems, and 3) reviews of system readiness.

4.2.1 Correction of Known Hardware/Design Problems

There are several known hardware and design problems that affect the performance of structures, systems, and components (SSCs) and require correction prior to startup under the Restart Criteria of Table 4.1 to ensure the safety of startup and operations of CPS. Examples include:

- Inspection, correction, and testing of electrical circuit breakers,
- Identification of the cause of the failure of the Reactor Recirculation Pump seal that occurred on September 5, 1996,
- Analysis and correction of performance issues associated with NRC Generic Letter 89-13 regarding Service Water System Problems Affecting Safety-Related Equipment (Note: The Generic Letter 89-13 Program will be assessed as part of the Program Readiness Review),
- Resolution of potential "hot shorts" caused by fires as identified in NRC Information Notice 92-18,
- Analysis of safety system logic testing to ensure necessary functions are appropriately tested as required by NRC Generic Letter 96-01 (Note: This will be accomplished under the Program Readiness Reviews),
- Initial modifications to resolve issues associated with NRC Generic Letter 96-06 regarding overpressurization of isolated containment penetration piping (Note: The NRC Generic Letter 96-06 Program will be assessed as part of the Program Readiness Review),
- Modifications to resolve issues related to the use of Thermo-Lag fire barriers,
- Replacement of the Control Rod Drive Mechanism (CRDM) ASCO solenoid valves, and
- Modifications to resolve degraded offsite voltage issues.

4.2.2 Design and Hardware Verifications

The causes of the problems discussed in Section 4.2.1 could potentially affect other systems or components. To determine the generic implications and extent of these problems, we will conduct focused design and hardware verifications on select systems prior to restart.

Our design and hardware verifications will consist of the following:

System Design and Functional Validation (SDFV)

This verification is being performed in response to several assessments of Clinton Power Station that identified weaknesses in the area of design bases integrity. A fundamental objective of the SDFV is to confirm reasonable assurance that systems, structures, and components (SSC) important to safe and reliable operation can perform their design and licensing basis functions.

The SDFV will be performed by an integrated team of outside consultants and CPS personnel. It will consist of a verification of the functionality of the Control Room Ventilation System (VC), Shutdown Service Water System (SX), Auxiliary Power Distribution System (AP), Containment Monitoring System (CM), Residual Heat Removal System (RH), and selected structural and Leak Detection System modifications. These systems were selected to ensure the scope of the verification includes safety-related, risk-significant, and severe accident functions, and an appropriate mix of engineering disciplines. For these systems, the verification will consist of the following steps:

- Identification of the system functions credited in the plant accident analyses
- Verification that these functions are consistently described in the Initiated Safety Analysis Report, Technical Specifications, and Operational Requirement Manual (ORM)
- Verification that the requirements associated with these functions have been accurately incorporated into operating procedures, abnormal operating procedures, and emergency operating procedures
- Verification that the Technical Specifications are consistent with respect to the accident analysis assumptions
- Verification that the test methods in CPS procedures accurately incorporate the technical requirements and adequately confirm system functionality consistent with the design and licensing basis
- Verification that the results of the implementation of pre-operational and surveillance procedures are sufficient to confirm SSC functionality

- Review of selected system modifications, including post-modification testing, to ensure that they did not adversely impact system functionality
- Evaluation of selected preventive maintenance activities with respect to their effect on system functionality
- Assessment of the material condition of the systems to determine if there are any conditions which challenge functionality
- Assessment of Illinois Power's response to industry and CPS operating experience to determine whether sufficient action has been taken to preserve functionality

Adverse conditions identified during these verifications will be documented, evaluated against the Restart Criteria in Table 4.1, and as necessary corrected prior to restart. Additionally, based upon the overall results of the verification for these systems, management may decide to expand the scope for verification to include additional systems (either in whole or for selected attributes). Expansion of the scope of the verification will be considered in the following cases:

- Periodic test results do not support functional requirements
- Problems with generic implications are identified
- The design basis for SSC functionality is unsubstantiated
- Functional requirements and test results are not consistent with the design and licensing basis

Oversight of the SDFV will be conducted by a Systems Independent Review Group (SIRG) consisting of experienced Illinois Power personnel and industry experts who have participated in similar reviews in the past. The SIRG will include personnel with experience in Operations, Maintenance, Engineering, and Licensing. It will review SDFV findings, review for generic issues, review for reportability, review potential restart issues, and review cases in which corrective action is proposed to be implemented after plant startup.

Verification of Corrective Action Sufficiency

This verification is being performed in response to the concerns regarding the adequacy of corrective actions, as addressed in NRC's Demand for Information Letter to CPS of September 26, 1997. This verification will confirm, on a sampling basis, that past corrective actions have been sufficient to maintain the functionality of SSCs.

The Verification of Corrective Action Sufficiency will consist of two parts.

For identified deficiencies since January 1, 1995, the SDFV reviews will determine whether the deficiency affected the required system functions. Specifically, degraded conditions will be evaluated to ensure corrective actions were sufficient and correct to restore the component and/or system to the functional requirements dictated by the design and licensing basis. Where those actions were not sufficient, additional corrective actions will be implemented.

Second, the Corrective Action Group will review equipment-related Condition Reports (CRs) classified as significant and issued since January 1, 1995, to ensure the causes of the noted problems have been identified and the corrective actions have been sufficient to ensure equipment functionality has been maintained. The group will also review selected closed MWRs to determine whether these MWRs have deficiencies which have not been properly entered into the CPS Corrective Action Program by means of a Condition Report.

Verification of Maintenance Sufficiency

This verification is being performed in response to concerns documented in NRC's Confirmatory Action Letter to CPS of August 6, 1997. This verification will confirm that the implementation of past preventive and corrective maintenance has been sufficient to preserve the functionality of SSCs.

The Verification of Maintenance Sufficiency will consist of four parts:

- Review of PM Requirements. As described in Element 4.06, NSED will conduct a review of existing PM tasks for pilot systems to verify specified requirements are correct for systems within the scope of the Maintenance Rule (unless justification is provided for excluding a particular system or part of it). Review will include comparison with vendor manuals, industry experience, regulatory requirements and information, and CPS experience. Deficiencies identified will be evaluated under the Restart Criteria in Table 4.1.
- Review of Maintenance Implementation. Maintenance will conduct a review of effectiveness of maintenance implementation. This will include specific reviews of toolbox skills, reviews of procedures, interviews with craft personnel to identify possible weaknesses in maintenance implementation, reviews of Condition Reports and MWRs to identify any adverse trends in maintenance implementation, and reviews of control of material. This review will provide confidence that maintenance program requirements are properly implemented. These assessments are described in more detail under PFE Element 5.05 on Material Condition.

- Review of PM Deferrals. NSED will conduct a review of the preventive maintenance tasks that were not performed as scheduled (overdue, late, or deferred). This will include an evaluation of each overdue, late, or deferred PM and its impact on equipment operability, both immediate and long-term. Additionally, an evaluation of the aggregate impact will be performed.
- Review of Corrective Maintenance. Corrective Maintenance reviews will be satisfied by the performance of other plan elements. The Corrective Action Group review of Significant CRs, the SDFV review of MWRs for selected systems, and the system engineer reviews will provide sufficient level of confidence in program effectiveness.

4.2.3 System Readiness Reviews

Prior to restart, CPS will perform system readiness reviews. These readiness reviews will be performed on all systems within the scope of the Maintenance Rule (unless justification is provided for excluding a particular system or part of it and approved by the MRT). The reviews will consist of two main parts.

First, the responsible System Engineer will conduct an assessment of system readiness for his/her system. The purpose of this assessment is to identify any items that need to be corrected prior to startup in accordance with the Restart Criteria of Table 4.1. This assessment will generally be conducted as follows:

- Conduct a review of open hardware/design related items applicable to their system against the Restart Criteria of Table 4.1. Some examples of these items include, but are not limited to, MWRs, late or overdue PMs or Surveillances, and CRs.
- Conduct a review of hardware/design related items (open and closed) since January 1, 1995 to identify any adverse trends related to their system.
- Conduct a physical walkdown of accessible portions of their systems. The purpose of this walkdown is to identify any materiel condition that could affect system functions.

The System Engineer will review the items above both individually and collectively to assess their impact on the ability of the system to support safe restart and operation of CPS under the Restart Criteria of Table 4.1.

Second, the Operations Department will conduct an assessment of system readiness from a practical operational perspective. This assessment will build on the results of the Systems

Engineer's review and will further verify there are no significant challenges to the operator's ability to safely restart and operate CPS. This assessment will generally be conducted as follows:

- Conduct necessary tagout removal, system lineups, and procedures required to place systems in standby readiness,
- Conduct all necessary Post Maintenance Testing,
- Verification that Mode Restraints are resolved,
- Conduct of a final verification walkdown. This walkdown will be conducted by the responsible System Engineer and an individual with Operations experience for the purpose of assessing the physical status of the system. This will also include an assessment of Operator Workarounds and MCR deficiencies for impact on operator's ability to perform his duties.

4.3 ORGANIZATION READINESS REVIEWS

The purpose of the organization readiness reviews is to ensure CPS organizations understand their roles and responsibilities and are properly staffed and structured to support restart and safe operation. Each Department Manager, the Facility Review Group, and the Nuclear Review and Audit Group will supervise performance of an organizational review for his/her organization. As determined by the Department Manager, separate organizational reviews may be performed for particular groups within the department.

The organization readiness reviews will consist of the following:

Organizational Staffing Reviews

Each CPS organization will perform self-assessments of its organizational staffing adequacy. These assessments will identify the assigned tasks and workloads (including backlogs) of the organization, verify the size of the staff of the organization is sufficient to accomplish the workload, and verify the qualification, training, and experience of the staff is sufficient for successful performance of assigned tasks.

Review of Roles and Responsibilities

Each CPS organization will perform self-assessments of the adequacy of the definition of its assigned roles and responsibilities. These assessments will verify that key positions in the organization have an adequate statement of the roles and responsibilities.

Reviews of Organizational Processes

Each CPS organization will conduct a self-assessment of its organizational processes. This assessment will focus on the following:

- Does the organization have clear lines of authority and responsibility?
- Are interfaces with other organizations clearly defined?
- Are sufficient processes in place to provide direction and information throughout the organization, including feedback and concerns from lower levels in the organization up the management chain?
- Does the organization have sufficient facilities and tools to accomplish its assigned responsibilities?
- Are the administrative procedures for the organization adequate to support the safe and efficient functioning of the organization?

Reviews of Open Items and Significant Issues

Each CPS organization will review open items applicable to the organization (e.g., items pertaining to personnel training and qualification, sufficiency of staffing, communication, supervision, the organization's administrative processes, etc.). Using the Restart Criteria in Table 4.1, each organization will determine whether the open items must be corrected prior to restart.

Finally, for each closed significant item (e.g., Significant CR, Notice of Violation (NOV), Licensee Event Report (LER), adverse trend) issued against the organization since January 1, 1995, the organization will review the corrective action for the item to verify the adequacy and effectiveness of the corrective action.

Reviews of Organizational Performance

Each organization will conduct a self-assessment of the adequacy of its performance. These reviews will focus on the following:

- Have the proper standards and expectations been established and understood by employees within the organization in areas such as self-checking, conservative decision-making, procedure compliance, and individual accountability?
- Are management and supervisory personnel regularly observing and monitoring their personnel to ensure these standards and expectations are being satisfied?

- Has the organization established and is it implementing a self-assessment process that is sufficient to upgrade performance by identifying and correcting its own problems?
- Does the organization promptly and effectively correct identified problems?
- Are personnel within the organization willing and able to support the PFE?
- Is there a process to assess the quality of ongoing activities?

Any concerns identified by these assessments will be evaluated for potential generic implications, which will be reviewed against the Restart Criteria in Table 4.1 to determine whether corrective action is warranted prior to restart.

Additionally, each CPS organization will also perform an analysis of open and closed items applicable to the organization that have been initiated since January 1, 1995 to identify any trends. Using the Restart Criteria in Table 4.1, each organization will determine whether any previously unidentified trends must be corrected prior to restart.

Organizational Readiness Review Report

Each organization performing an organizational readiness review will prepare a report of the results of the review. This report will describe what was reviewed, describe the results of the review, and identify additional actions that need to be taken prior to restart and additional actions to be taken independently of restart.

4.4 PROGRAM READINESS REVIEWS

The purpose of program readiness reviews is to ensure the readiness of CPS programs to support the safe restart and operation of CPS. The readiness reviews will consist of four key actions:

- Initial screening of CPS programs to define those that could affect the safe operation of the plant using the Restart Criteria in Table 4.1.
- Review of open items and significant issues related to the program since January 1, 1995 to identify any items or issues that must be corrected prior to restart using the Restart Criteria in Table 4.1.
- Assessment of program adequacy to support safe restart and operation.

- Assessment of program owner capability.

These actions are discussed in more detail in the following sections.

4.4.1 Initial Screening of CPS Programs

An initial screening evaluation has been performed for plant programs. The screening evaluation was completed by the Action Team that developed the Restart Readiness Review Plan. The Team identified those programs which, if deficient, could affect the safety of startup or operation using the criteria in Table 4.1.

The Team then reviewed these programs to determine which programs are being corrected under other Elements of the Plan. The restart readiness review will take credit for the review and correction of these programs under the other Elements. Owners of programs will validate that their programs do not require a readiness review.

4.4.2 Review Of Open Items And Significant Issues

For those programs that require a readiness review, program owners will perform an evaluation and assessment of open items and significant issues that pertain to the program.

The evaluation will consist of the following:

- Open items will be reviewed to determine whether they must be corrected prior to restart using the Restart Criteria in Table 4.1.
- Closed significant weaknesses (e.g., Significant CRs, NOVs, LERs, adverse trends) issued since January 1, 1995 will be evaluated to ensure they have been effectively resolved and there are no indications of recurrence. Significant issues that have not been successfully resolved will be evaluated against the Restart Criteria in Table 4.1.

4.4.3 Review of Program Adequacy

For those programs that require a readiness review, program owners will perform an assessment of the program to support safe startup and operation. This assessment will review the programs to ensure that they satisfy applicable requirements, such as NRC requirements, requirements in

the Technical Specifications, and requirements in the Updated Safety Analysis Report for CPS. Additionally, this review will ensure the programs contain those provisions that are essential to ensuring safe startup and operation (or preventing adverse impacts on safe startup or operation). In performing this review, the program owner will consider applicable NRC and industry guidance and the attributes for an effective program being identified under Element 4.05. Items issued since January 1, 1995 will also be analyzed to identify any trends not previously identified. Any deficiencies or weaknesses identified by these reviews will be compared against the Restart Criteria in Table 4.1 to determine whether they need to be corrected prior to restart.

In performing these assessments, the program owner may rely upon the program readiness reviews conducted under the CPS Strategic Recovery Plan in the Spring of 1997. If so, the program owner will document the basis for reliance upon the previous readiness reviews, identifying how the criteria discussed above were satisfied by the previous review and discussing how subsequent performance and events have been taken into account.

4.4.4 Assessment Of Program Owner Capability

Each department manager will affirm each program has a single owner (or will justify any exceptions), and will affirm the program owner has the capability, by training and experience, to effectively manage the program. Program owners will also conduct an evaluation to ensure clear ownership for program performance.

4.5 PERFORMANCE MEASURES

In addition to the plant-wide performance measures developed for the Plan for Excellence, each organization will establish measures to assess its performance, as appropriate. These performance measures will identify goals for startup and goals for long-term achievement of excellence. Each organization will ensure the current status meets the restart goal for each performance measure or prepare a written justification for not meeting the goal prior to restart.

Backlogs for such items as maintenance work requests, corrective action program, procedure revisions, and drawing revisions will be evaluated by the program owner. If it is determined that backlog size for any of the work programs is excessive, a review will be conducted by the program owner to focus on the cumulative effect of the backlog. This review will consider the following criteria:

- High potential to impact plant operating reliability

- Adverse impact on safety system availability or performance
- Significant challenge to plant/personnel performance

These performance measures and the results of the reviews will be documented.

Each CPS program should have performance measures that are used by the program owner to assess the effectiveness of the program. If such measures do not exist, the program owner will develop measures for his programs, or provide justification for not having performance measures. These measures will be reviewed as part of the evaluation to determine whether they support an affirmation of program readiness to support CPS restart and operation.

4.6 RESTART READINESS AFFIRMATION

The previous sections describe the CPS Power Station restart readiness reviews to determine the readiness of the plant, programs, and the organization to support safe start-up and power operation. Based upon these reviews, this section describes the process for providing affirmations that departments, programs, and plant systems are ready to support unit restart and power operation. Affirmation will also be provided by the Quality Assurance and Licensing Departments. The Management Review Team will evaluate the results of the readiness assessments and integrate these results to determine whether to recommend restart of the plant to the Chief Nuclear Officer.

4.6.1 Readiness Review Affirmation Objectives

Readiness review affirmations will be performed to achieve the following objectives:

- Ensure effective communications between station management and staff to assure important issues relative to plant restart and power operation are well-understood, facilitate teamwork in the management of these issues, and reinforce line management ownership of the issues and results.
- Ensure restart-required issues have been effectively resolved including those emergent issues identified during the course of the outage.
- Establish an approach for continued performance improvement through linkage of assessment results with post-restart plans.

4.6.2 Conduct of Readiness Review Affirmations

A responsible owner will be assigned to complete a readiness review. The responsible owner will present these results to the Management Review Team concluding with their affirmation of readiness to support restart and power operation. As a minimum, readiness reviews will be completed in the following areas:

- Hardware/designs as defined in Section 4.2.
- Station organizations as defined in Section 4.3
- Station programs that were judged to require a review as determined in Section 4.4.

In addition to these readiness reviews, the Management Review Team will evaluate presentations from the Licensing Department and Quality Assurance Department on their independent affirmations prior to recommending plant restart to the Chief Nuclear Officer. (Table 4.2 and Table 4.3)

The Management Review Team will perform an integrated evaluation of the readiness reviews and independent assessments to establish a recommendation for the Chief Nuclear Officer regarding the effectiveness of the management team in resolving performance issues, the ability of the management team to sustain the performance improvements, and the overall site readiness to support restart.

4.6.3 Readiness Review Affirmations

Readiness review affirmations will include the following items as a minimum scope.

Affirmation of Hardware/Design Readiness

Prior to restart, each system engineer will review the status of each system assigned to him/her and will affirm restart readiness of the system to support safe restart and full power operation. Implementation of this review will include close interface and coordination with Plant Operations.

Incomplete activities at the time of the presentation of the final system readiness review will be identified as an open item and tracked to completion. Items that do not need to be resolved prior to restart and remain open at unit restart will be prioritized for post-restart resolution. Technical specification systems will be verified operable before entry into a mode where they are required to be operable.

System engineers will:

- Confirm resolution of any open issues that satisfy the Restart Criteria in Table 4.1.
- Confirm the material condition of the system supports safe unit startup and power operation.
- Confirm completion of the review of significant recurring or repetitive equipment problems and the development, implementation, and completeness of actions to address these problems.
- Confirm completion of walkdowns to identify any remaining material condition concerns, and
- Coordinate implementation of compensatory measures (as appropriate) for post-restart items/issues and assessment of their collective safety impact.

Pre-restart system walkdowns will be conducted with Plant Operations to confirm there are no significant unidentified material condition issues. In accordance with existing plant procedures, walkdowns at system operating temperature and pressure will be conducted, when appropriate, to confirm system restoration during plant restart and power ascension.

System readiness reports will be reviewed by the Director of Plant Engineering, Manager of Nuclear Station Engineering, Director-Operations, and the Management Review Team.

Maintenance Department will affirm there is reasonable assurance that there are no problems with past maintenance activities that will adversely affect equipment function.

Nuclear Station Engineering Department will affirm there is reasonable assurance the SSCs can perform their design bases functions.

The Operations Department will affirm there is reasonable assurance there are no conditions to interfere with the ability to safely startup and operate the plant.

The above hardware/design restart readiness affirmations will be reviewed by the Management Review Team.

Affirmation of Organization Readiness

Prior to restart, managers responsible for each major functional department will affirm the readiness of that department's ability to support safe startup and operations. This affirmation will:

- Confirm resolution of any issues that satisfy the Restart Criteria in Table 4.1.

- Confirm completion of assigned restart actions,
- Confirm the organization and personnel/management capability are sufficient to support safe start up and operation,
- Confirm resolution of safety cultural issues and line-of-defense barriers to safe plant operation,
- Confirm appropriate post-restart assessments and monitoring processes are in place to prevent recurrence of any performance issues.

Final department readiness affirmations will be reviewed by the Management Review Team.

Affirmation of Program Readiness

Program owners will affirm the readiness of their programs to support safe startup and operation of CPS. The assessment performed to provide this affirmation will :

- Confirm resolution of any issues that satisfy the Restart Criteria in Table 4.1
- Confirm methods have been implemented to maintain program compliance with regulatory requirements and the CPS licensing bases, and
- Confirm implementation of compensatory measures (as appropriate) for post-restart items/issues.

Final program readiness affirmations will be reviewed by the Management Review Team.

The Plant Manager Recommendation

The Plant Manager will evaluate the implementation and the results of the readiness reviews to determine whether they support a conclusion that CPS is ready to restart. The Recovery Manager will establish a team to assist in performing these evaluations. This team will provide guidance to help the owners implement their readiness reviews, and as appropriate the owners will make oral presentations to the team to defend their readiness reviews. Based upon his evaluations, the Plant Manager will make a recommendation to the Chief Nuclear Officer regarding the readiness of CPS to restart.

Integrated Affirmation

Prior to initiating the integrated assessment, the Management Review Team will establish measures to define when the plant is ready for restart, including,

- Overall root causes are understood with required corrective actions implemented,
- Maintenance, engineering and other backlogs are adequately reviewed, screened and restart issues resolved, with appropriate completion schedules established for non-restart required items, and
- Specific restart activities and initiatives (i.e., action plans and hardware/non-hardware action items) are completed.

The Management Review Team will complete an integrated assessment of overall site readiness (including the effectiveness of management in resolving performance issues and establishing methods to prevent recurrence). The management assessment will include the following key areas (see Table 4.4);

- Oversight and Commitment
- Organization and Support
- Operations and Maintenance

In addition to the management assessment, the overall site readiness assessment will consist of a "roll up" of several interfacing and overlapping inputs including:

- Actions for restart issues,
- Hardware/design verifications,
- Hardware/design readiness affirmations,
- Program readiness affirmations,
- Organization readiness affirmations,
- Licensing and Quality Assurance Departments affirmations (Tables 4.2 and 4.3), and
- Close out and disposition of all restart list items.

Restart Recommendation

The FRG is responsible for conducting reviews of restart readiness review activities to assess collective (aggregate) significance of open items on the ability to safely restart and operate CPS. They shall provide the results of these reviews and a specific recommendation regarding startup of CPS to the Plant Manager.

The Management Review Team will review and evaluate both the individual inputs and the roll-up of these inputs and provide a recommendation to the Chief Nuclear Officer for restart

authorization. Required review and approval by the Facility Review Group will be completed prior to initiation of startup activities. The Nuclear Review and Audit Group and the Senior Advisory Team will provide independent oversight of the readiness assessment and affirmation process and provide their conclusions to the Chief Nuclear Officer prior to restart.

Table 4.2

Licensing Director Affirmation

In addition to performing a Department Manager's Readiness Assessment, the Licensing Director shall consider the following in providing affirmation that all restart licensing required items are closed:

- Applicable license amendments, if any, have been issued.
- Applicable license exemptions, if any, have been granted.
- Applicable relief, if any, has been granted.
- Imposed orders, if any, have been modified/rescinded.
- Confirmatory Action Letter and Demand for Information Letter conditions have been satisfied.
- Corrective action has been taken for any escalated enforcement issues.
- Allegations referred to Illinois Power by NRC, if any, have been appropriately evaluated against the Restart Criteria in Table 4.1 and evaluated and corrected as appropriate.
- 10 CFR 2.206 petitions, if any, have been appropriately evaluated against the Restart Criteria in Table 4.1 and evaluated and corrected as appropriate.
- Open license commitments have been evaluated against the Restart Criteria in Table 4.1 and evaluated and corrected as appropriate.

Table 4.3
Quality Assurance Manager Affirmation

In addition to performing a Department Manager's Readiness Assessment, the Quality Assurance Manager shall provide affirmation that:

- The scope of the readiness restart review was reasonably designed to encompass issues that could affect the safety of restart and operation.
- The methods in the readiness restart review were reasonably designed to ensure the identification and correction of such issues.
- The readiness restart review was implemented effectively.

Table 4.4
Management Review Team Affirmation

The Management Review Team shall consider the following in providing affirmation to the Chief Nuclear Officer that management is ready to support safe startup and power operation:

Oversight and Commitment

- Management commitment to achieving improved performance
- Goals/expectations communicated to the staff
- Resources available to management to achieve goals
- Qualifications and training of management support safe operation
- Management commitment to procedure adherence
- Management involvement in self-assessment and oversight of their staff
- Effectiveness of management review committees
- Effectiveness of internal management meetings
- Management in-plant time
- Management awareness of day-to-day operational concerns
- Ability to identify and prioritize significant issues
- Ability to implement effective corrective actions
- Management feedback to their staff
- Management holds their staff and themselves accountable
- Adequacy of independent oversight groups, such as QA, ISEG, and FRG

Table 4.4

**Management Review Team Affirmation
(Continued)**

Organization and Support


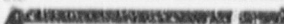
- Structure of the organization
- Ability to adequately staff the organization
- Effect of any reorganization
- Establishment of the proper work environment
- Ability to foster teamwork among the staff
- Ability to resolve employee concerns
- Ability to provide engineering support
- Adequacy of administrative procedures

Operations and Maintenance

- Licensed operator staffing meets requirements
- Level of formality in the control room
- Adequacy of control room simulator training
- Control room/plant operator awareness of equipment status
- Adequacy of operating procedures
- Procedure usage/adherence
- Log keeping practices
- Maintenance program effectiveness
- Maintenance backlog managed and impact on operation assessed
- Adequacy of plant housekeeping and equipment storage
- Adequacy of tagging
- Adequacy of pre-job briefings and turnovers

Activity Description	1997		
	DEC	JAN	FEB
Rj-06			
Division 1 Work			
Field Work			
Division 1 Outage Work Window			
Division 1 RH Outage Work Window			
Division 1 DG Outage Work Window			
Division 1 SX Outage Work Window			
Division 1 VG Outage Work Window			
Division 1 VP Outage Work Window			
Division 1 VC Outage Work Window			
Division 1 Outage 18 Month PM's & Surveillances			
Division 1 Bus Outage (Regulating X-Fmr) AP-33			
Diesel Generator 1 - Integrated Test			
Division 2 Work			
Field Work			
Division 2 Outage Work Window			
Division 2 VC Outage Work Window			
Division 2 Outage 18 Month PM's & Surveillances			
Division 2 Bus Outage (Regulating X-Fmr) AP-34			
Division 3 Work			
Field Work			
Division 3 Outage Work Window			
HPCS Outage Work Window			
Division 3 SX Outage Work Window			
Division 3 DG Outage Work Window			
Division 3 Outage 18 Month PM's & Surveillances			
Division 3 Bus Outage (Regulating X-Fmr) AP-35			
Diesel Generator 3 - Integrated Test			
RAT/ERAT Outage			
Field Work			
RAT Outage - Tap Change (Mod AP-040)			
RAT Outage Disconnect Switches (Mod AP-44)			
ERAT Outage Disconnect Switches (Mod AP-045)			
ERAT Outage Static VAR Compensators (Mod AP-038)			
RAT Outage Static VAR Compensators (Mod AP-037)			

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Run Date	19 FEB 98	

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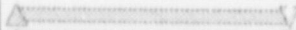

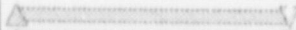

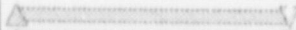

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Date	Revision	Checked	Approved

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Activity Description	1997														
	DEC	JAN	FEB												
Non Safety Electrical Bus Outage															
Field Work															
4KV 1B Bus Outage															
6.9KV 1B Bus Outage															
4KV 1A Bus Outage															
6.9 KV 1A Bus Outage															
Main Power Transformer Outage															
Switchyard Work															
Field Work															
Switchyard Breaker 1 - Overhaul															
Switchyard Breaker 2 - Overhaul															
Remaining System work															
Field Work															
RWCU Outage Work Window															
Reactor Recirc System Work			██████████												
Control Drive System Work			██████████												
Feed & Cond Related Systems (CB,CD,CP & FW)															
Steam Related Systems (HD,DV,ES,OG,GS & TD)															
Main Steam & MSIV System Work (MS & IS)															
Rod Control Information Systems Work															
Plant Support															
Field Work															
Prepare / Paint Suppression Pool Area			██████████												
Prepare / Paint Turbine Building			██████████												
Prepare / Paint - Dome Area			██████████												
Prepare / Paint Fuel Building - 737 Elev.			██████████												
Scram Solenoid Pilot Valves/Upgrade Air Valves			██████████												
Motor Lubrication Fix & Lub Program			██████████												
LLRT'S															
Hardware															
RR Pump Seal															
Engineering															
RR Pump Runs For Seal Testing															
Evaluate Test Results RR Pump															
Field Work															
Install Instrumentation On RR Pump's			██████████												
Inspect RR B Pump & Motor (Contingency)															
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Project Start	01 NOV 97	 Early Bar													
Project Finish	03 SEP 01	 Progress Bar													
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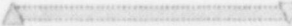

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Date	Revision	Checked	Approved

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Activity Description	1997		
	DEC	JAN	FEB
Thermolag			
Engineering			
Thermolag FP-101 Engineering			
Thermolag FP-097 Engineering			
Thermolag FP-094 Engineering			
Thermolag FP-098 Engineering			
Thermolag FP-100 Engineering			
Field Work			
Thermolag FP-101 Installation			
Thermolag FP-097 Installation			
Thermolag FP-094 Installation			
Thermolag FP-098 Installation			
Thermolag FP-100 Installation			
Hot Shorts			
Field Work			
Hot Shorts Division 1 Modify 47 Valves			
Hot Shorts Division 2 Modify 6 Valves			
Nuclear Station Engineering			
Engineering			
Resolve DG Temperature CR			
ECCS Strainer Fabrication M-083 Mod			
Design FW Keep Fill FW-039 Mod			
App. R Compliance Startup Assessment			
Design Complete Mod AP-33 Regulating X-Fmr Div 1			
Design Complete Mod AP-34 Regulating X-Fmr Div 2			
Design Complete Mod AP-35 Regulating X-Fmr Div 3			
Design Complete Mod AP-37 Var Compensators Div 1			
Design Complete Mod AP-38 Var Compensators Div 2			
Design Complete Mod AP-44 RAT Disconnect Sw			
Design Complete Mod AP-45 RAT Disconnect Sw			
Field Work			
Fab & Install FW Keep Fill FW-039 Mod			
Generic Letter 89-13			
Engineering			
RH "A" Heat Exchanger Test - Division 1			
Generic Letter 96-01			
Engineering			
Logic Sys Functional Testing Review (96-01)			
Project Start	01 NOV 97		Early Bar
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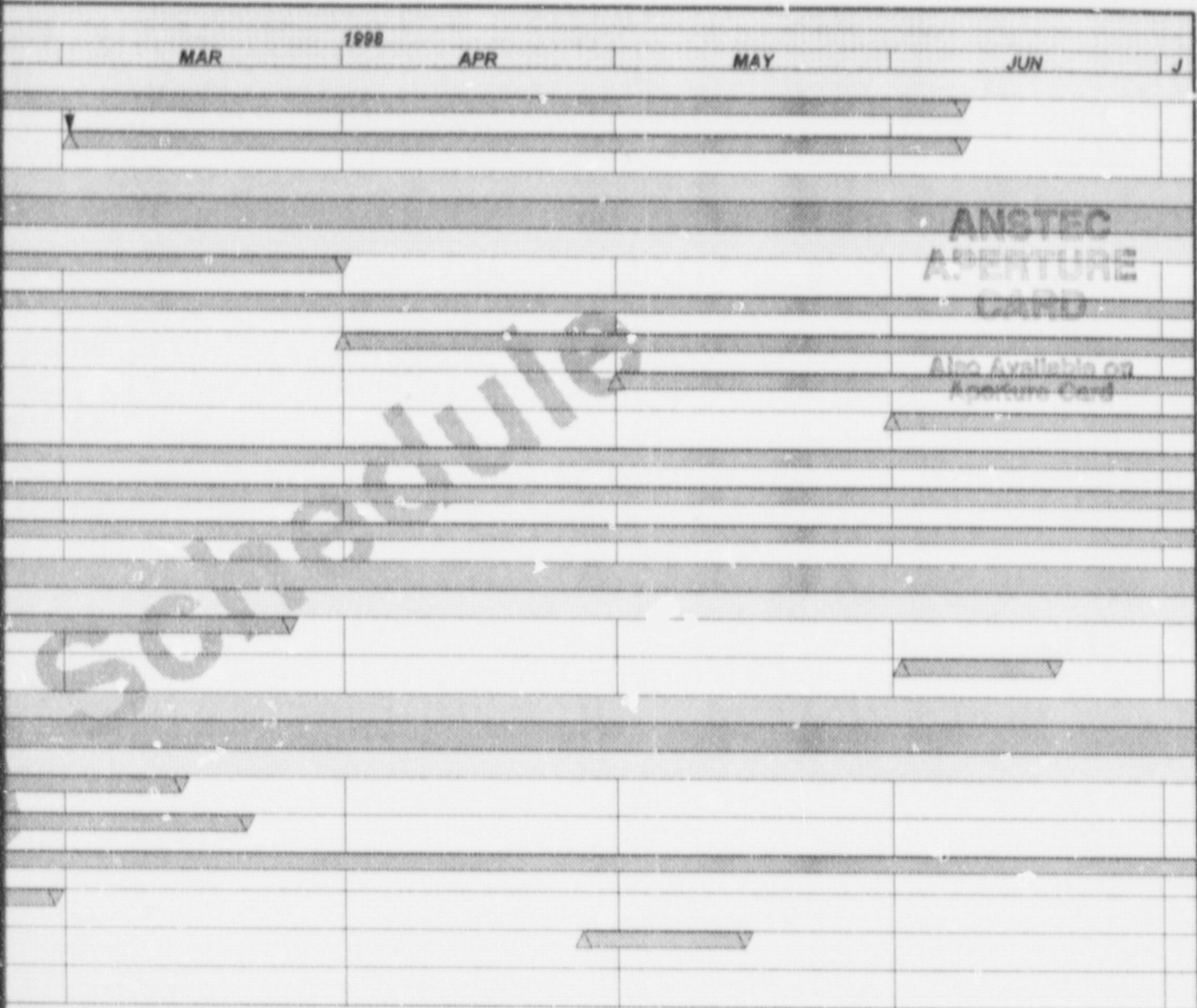
Date	Revision	Checked	Approved

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Activity Description	1997		
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Engineering			
OPS/C&I Revise Procedures (96-01)			█
Logic Sys. Func Test Using Revised Proc. (96-01)			
Training/Emergency Response Organization			
Nuclear Training & Support			
Hot License Class 7			██████████
Non-License Ops Class 97-2			██████████
Non-License Ops Class 98-1			
Hot License Class 8			
Shift Technical Advisor			
Operator Requal Training			▲
Radiation Protection Requal Training			▲
Chemistry Requal Training			
Emergency Response Organization			
Emergency Response 1st Quarter Drills		██████████	
Emergency Response 2nd Quarter Drills			
Licensing/NRC			
NRC Activities/Events			
Degraded Voltage Modification License Submittal			██████████
Response to SET Report			██████████
USAR Verification			██████████
Response to Circuit Breaker CAL			██████████
Response To Demand For Info On Corrective Action			██████████
FW Keep Fill Mod License Amendment Submittal			██████████

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Project Finish	03 SEP 01	 Progress Bar
Data Date	16 FEB 98	
Run Date	19 FEB 98	



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Schedule Thru June 1998
7-6, Hardware, Training
And Licensing


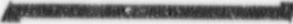
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Rev. E February 19, 1998

Date	Revision	Checked	Approved

9802260094-04

Activity Description	1997		
	NOV	DEC	JAN
PFE Development Schedule			
NRC Recovery Panel Meetings			
NRC Recovery Panel Meeting			◆
NRC Recovery Panel Meeting			
NRC Recovery Panel Meeting			
NRC Recovery Panel Meeting			
Organizational Phase			
Develop Vision/Mission Statements	██████████		
Preparation For Management Workshops	██████████		
Develop Approach to Prepare PFE	██████████		
Action Plan Development & Review			
Preparation For Element Teams Startup		██████████	
Rev/Approve 1st Group Team Recommendations			██████████
1st Group Element Teams Develop Recommendations	██████████	██████████	██████████
Submit/Rev Recommendations/Dept & Focus Groups			
Focus Group Recommendations			██████████
RP/Chemistry Department Recommendations			
Engineering Department Recommendations			
Dev/Review Recommendations From "On Hold" Teams			
Preparation/Submittal Of PFE Revisions			
Prepare Draft/Finalize PFE Rev. 0		██████████	██████████
Preparation/Submittal PFE Rev. 1			
Develop Implementation Schedules			
Develop Implementation Schedules			██████████
Employee Feedback/Communication/Rollout			
Employee Feedback/ Communication/Rollout		██████████	██████████
Management, Supervision & Oversight			
104 On-Site Oversight			
Perform Independent Assessment Of FRG			
Independent Assessment Of NRAG/ISEG/FRG/EA/QA			
People			
204 Personnel Management & Staffing			
Evaluate Current Management			

Project Start 01 NOV 97  Early Bar
 Project Finish 03 SEP 98  Progress Bar
 Data Date 16 FEB 98
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Input From 1st Group of Teams & Focus Groups

Includes Input From "On-Hold" Teams,
RP, Chemistry & Engineering Departments

10403

10420

20404

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Date

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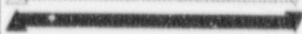
Schedule Thru June 1998
PFE & Restart Items
for Excellence

9802260094-05

Activity Description	1997		
	NOV	DEC	JAN
Operational Excellence			
301 Safety Culture			
Reinforce Expectations For Strong Safety Culture			
302 Human Error Reduction			
Develop & Implement HER Recommendations			
303 Training To Improve Performance			
Dev/Rev Action Plan (May include Restart Issues)			
304 Operations Centered Station Stand. & Perform			
Shift Plant Manager Implementation			
Shift Plant Manager Implementation			
Review/Revise Core Values			
Review/Revise Core Values			
Develop Department Goals			
Develop Department Goals			
305 Conduct of Operations			
Develop Specific Expected Behavior Document			
Develop Specific Expected Behavior Document			
Relieve SRM Of Admin Duty To Rove Plant			
Relieve SRM Of Admin Duty To Rove Plant For Comm			
Verify USAR & ISI Are Satisfactory For Surv.			
Verify USAR & ISI Requirements For Surveillances			
Develop/Conduct Training ITS Sect 3.0, 3.8 & 5.0			
Operations Work Control Function			
Implementation of Operations Work Cntrl Function			
Safety Tagging			
Implement Tagging Changes			
Operations Work Management Team			
Implement Operations Work Management Team			
Define & Develop Operations Work Management Team			
Identify Operations Work Management Functions			
Support On-Line & Shutdown Risk Assessment Proc			
Evaluate & Revise Operations Programs For OWMT			

30505.05, 06, 07, 08, 09 & 12

Preliminary

Project Start	01 NOV 97	 Early Bar
Project Finish	03 SEP 01	 Progress Bar
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30101, 30101.01, 30101.02A, 02B, 02C, 30102,
30111.02, 30114, 30116 10 & 30118

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30201, 01, 02, 30202, 01, 30203, 30205.02, A,
B, C, D, E, F, 30205.03F & K

"On Hold" Team 30301

30401, 30401.01, 02, 03, 04, 04A & 30401.05

30402.01, 02, 03, 03A, 04, 05, 05A, 06,
06A, 07, 07A, 08, 08A, 09

30403.02, 02A, 02B, 03, 03A, 03B, 03C,
03D & 03E

30501.01, 01A, 01B, 01C, 01D, 01E, 01F,
01G, 01H, 01I, 01J, 0K & 02

30505.06

3057.1D

3057.3F

30508.01, 02 & 03

30510, 01A, 01B, 01C, 01D, 01E & 01F

30510.03, 03A, 03B, 03C, 03D, 03E, 03F,
03G, 03H, 03I, 03J, 03K, 03L, 03M, 03N,
03O, 03P, 03Q, 03R, 03S, 03T, 03U & 03V

30510.06

30510.06A

30510.08, 08A, 08B, 08C, 08D, 08E, 08F &
08G

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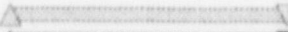
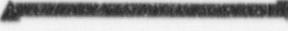
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Schedule Thru June 1998
Top PFE & Restart Items
For Excellence

9802260094-06

Activity Description	1997		
	NOV	DEC	JAN
Processes & Programs			
401 Corrective Action Program (CAP)			
Behavior			
Implement New CAP Behavior Changes			
Expectations and Accountability			
CAP Expectations and Accountability			
Performance Measures			
Performance Measures			
Communications			
CAP Communications			
General Corrective Action Plan Training			
CAP General Site Training			
Corrective Action Program Process Changes			
CAP Process Changes			
Procedure Changes			
CAP Procedure Changes			
402 Design & Configuration Control			
System Design Functional Validation & Config			
System Design Functional Validation & Walkdowns			
Configuration Documentation Backlog			
Reduce A.A1.B, Configuration Docs Backlog			
Calculation Retrievability			
Improve Calculation Retrievability			
Safety Evaluation Process			
Improve Safety Evaluation Process			
403 Work Management Program			
Work Management Process			
Define/Develop Work Management Process			
Centralized Work Management			
Define/Develop Centralized Work Management Org			
Prioritizing & Scoping Process			
Define/Develop Prioritization Site Wide			
Work Management Scheduling & Coordination			
Define/Develop WM Scheduling & Coord. Methods			
Project Start	01 NOV 97		Early Bar
Project Finish	03 SEP 01		Progress Bar
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Run Date	19 FEB 98		

Preliminary

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40101_01_01A_01B_01C_01CA_01CB_01CC_01D
01DA_01DS_01DC_01DD_01E_01EA_01F_01G_02
03_03A_03B

Also Available on
App. Info Card

40102_01_02_03_04_05_06_07_08_09

40103_01_01A_01B_01C_01CA_01CB_01CC_01CD
01CE_01CF_01D_01DA_01DB_01DC_01E_01EA
01F_01G_02_02A_02B_03

40104_01_01A_01B_01C_01D_01E
03A_03B_03C

40105_01_01A_02_02A_02B_03_03A_03B

40106_01_01A_01B_01C_01D_01E_02_02A_02B
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02CA_02CB_02CC_02CD_02D_02DA_02E_02EA
02EB_02EC_02ED_02EE_02EF_02EG_02F_02FA
02FB_02G_02H_02HA_02HB_02HI_02IA_02J
02JA_02JB_03_03A_03B

40107_01_01A_01AA_01AB_02_03_03A_03AA
03AB_04_04A_04AA_04AB_04B_05_05A
05AB_06_06A_06AA_06AB_07_07A_07AA_07AB

40202

40211_01_05

40212_18

40213_01_08_13_15_23

40301_01_02_02-1_0202_0203_04

40302_01_0101_0102_0103_0104

40304_01_02_0201_0202_0203_0204_0205

40307_01_04

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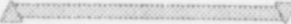

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FE & Restart Items

Excellence

9802260094-07

Activity Description	1997		
	NOV	DEC	JAN
Outage Organization & Outage Schedule Develop An Outage Organization & Schedule			
Risk Assessment (On-Line & Shutdown Risk) Dev. Shutdown & Online Risk Assessment Prgm.			
Long Term Work Backlog Develop Long Term Method To Work Backlog			
Methodology For Control Of Work Define Work Mgmt. Methodolgy For Work Control			
404 Procedures			
Review/Rev Ops Proc. For Conservative Decisions			
405 Program Effectiveness			
Establish Attributes Of Healthy Programs			
ID Prgms Required for Restart/Owners/Sponsor			4050
406 Preventive Maintenance (PM)			
Research & Define P.A. Program Problems			
Comp. Pilot Sys Analysis & Eval PM Prgm Adequacy			40601
Diesel Generator Room HVAC (VD)			
Battery and DC Power Dist. (DC)			
Control Rod Drive (RD)			
Hydrogen (HY)			
Fuel Pool Cooling & Cleanup (FC)			
Fuel Handling & Transfer (FH)			
Plant Equipment Performance			
501 Maintenance Rule			
Maintenance Rule Inspections			
Preparation Comp./Maintenance Rule Inspection			
NRC Maintenance Rule Baseline Inspection			
Engineering Monitoring/Evaluating			
Ensure Failure Id Portion Captures NUMARC D-170			
Operations Removal Of Equipment Unavailability			
Create Single Program For Equip Removal U-167			
Estab Of A(1) Classification/Goals/Action Plans			
Improve Guidance On A(1) Classification D-162			
Implement & Review Program Effecting Maint. Rule			
Review NSED M.07, CS-09, 03, 04, A-18.R0 D-171			
Project Start	01 NOV 97		Early Bar
Project Finish	03 SEP 01		Progress Bar
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40308.01, 0101, 0102, 0103

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40308.01, 0101, 010101, 010102, 010103, 010104,
010105, 010106, 0102, 0201, 03, 0301, 0302,
0303, 0304, 0305

Also Available on
Aperture Card

40310.01, 02, 03

40311.01, 04, 0401, 0402, 0403, 0404

40414, 01, 02

40502.01, 02

40610

40610.1010, 1011, 1012, 1013 & 1014

40610.1020, 1021, 1022, 1023 & 1024

40610.1030, 1031, 1032, 1033 & 1034

40610.1040, 1041, 1042, 1043 & 1044

40610.1050, 1051, 1052, 1053 & 1054

40610.1060, 1061, 1062, 1063 & 1064

50105.04

50106.01

50107.01

50108.01A

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PFE & Restart Items

Excellence

9802260094-08

Activity Description	1997		
	NOV	DEC	JAN
Implement & Review Program Effecting Maint. Rule Revise Operations Procedure CPS 1014.10 D-168			
Training & Communications			
Develop & Provide General Maintenance Rule Train			
Develop & Provide General Maintenance Rule Train			
502 Testing			
Dev/Rev Action Plan (May Include Restart Issues)			
503 System Engineering Program Improvements			
Dev/Rev Action Plan (May Include Restart Issues)			
504 Material & Parts			
Dev/Rev Action Plan (May Include Restart Issues)			
505 Material Condition			
Material Condition Start-Up Restraints			
Clear Identified Start-Up Category 1C Items			
506 Maintenance Effectiveness			
Dev/Rev Action Plan (May Include Restart Issues)			
507 Current Backlog Reduction			
Reduce Current Backlog For Start-Up			
Plant Restart Readiness Review			
701 System Readiness Reviews			
System Readiness Reviews			
702 Organization Readiness Reviews			
Organization Readiness Reviews			
703 Program Readiness Reviews			
Program Readiness Reviews			
704 Performance Measures			
Establish Performance Measures			
705 Affirmations			
Affirmations			

Project Start	01 NOV 97		Early Bar
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50108.01B

50108.01

50108.02

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"On Hold" Team 50201

"On Hold" Team 50301

"On Hold" Team 50401

50501.1, 2, 3A, 3B, 4A, 50502.1, 3 & 4

50501.5A, A1, A2, A3, A4, A5, A6, A7, A8, A9, A10

"On Hold" Team 50601

50701, 05, 07, 08 & 10

70100

70200

70300

70400

70500

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Schedule Thru June 1998
Pop PFE & Restart Items
For Excellence

9802260094-09

Activity Description	1997		
	DEC	JAN	FEB
Management, Supervision & Oversight			
103 Team Work			
Evaluate Effectiveness of Continued Shifts			
104 On-Site Oversight			
On-Site Oversight Actions for FRG/ISEG/QA			
People			
201 Staff Development & Opportunities			
Near Term Staff Development & Opportunities			
233 Communication			
Near Term Communication Actions			
Processes & Programs			
402 Design & Configuration Cont. of			
Configuration Management Definition & Estab Procedure & Training Development			
Set Point Program Review			
Self Assessment & Program Improvements			
Design Basis Consolidation			
Develop Prog for Consolidation Design Basis Docs			
Configuration Management Assessments			
Assess Temp/Part Mod. & OOS Programs			
Design & Configuration Change Processes			
Staff/Develop & Conduct Training			
Data & Information Integration (Pilot)			
Data Information Integration Pilot Project			
Current Licensing Basis Definition & USAR Valid			
USAR Validation Project			
Configuration Documentation Backlog			
Near Term Actions to Reduce Backlog non A,A1,B1			
Calculation Retrievability			
Near Term Actions Improve Calc. Retrievability			
Safety Evaluation Process			
Develop & Present Enhanced Training			
Project Start 01 NOV 97	▲-----▼ Early Bar		
Project Finish 03 SEP 01	■-----■ Progress Bar		
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Schedule

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2B (Near Term Actions)
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9802260094-10

Activity Description	1997		
	DEC	JAN	FEB
403 Work Management Program			
Problem Identification			
Develop Single Method of Problem Identification			
FIN Team			
Develop/Define Roles/Responsibility of FIN Team			
Work Package Process Team			
Incorporate Recommendations Work Pkg. Process			
Post Maintenance Testing Program			
Define & Develop Post Maint. Test Program			
Method For Closing Work Packages			
Revise Method for Closing Out Work Pkg's			
404 Procedures			
Revise Procedure Writers Guide & Others Proc.			
405 Program Effectiveness			
Establish Prgm Project Mgrs Non-Restart Prgms			
Develop Procedure, Train & Implement			
Develop Program Descriptions			
Plant Equipment Performance			
501 Maintenance Rule			
Scoping			
Scoping			
Safety Significance			
Safety Significance			
Maintenance Rule Functions			
Maintenance Rule Functions			
Performance Criteria			
Performance Criteria			
Engineering Monitoring/Evaluating			
Engineering Monitoring/Evaluating			
Implement & Review Program Effecting Maint. Rule			
Implement & Review Programs Effecting M/R			
A(3) Periodic Assessments			
Review Existing Procedures NUMARC 93-01			
			50110.01
Project Start	01 NOV 97		Early Bar
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Data Date	16 FEB 98		
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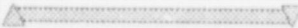

Schedule Thru June 1998
(Near Term Actions)
for Excellence

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9802260094-11

Activity Description	1997		
	DEC	JAN	FEB
507 Current Backlog Reduction			
Reduce Backlog Of Non Restart Work			

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50781, 703, 754, 706, 708, 111, 712 & 713

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(Near Term Actions)
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