SOUTH TEXAS PROJECT
ELECTRIC GENERATING STATION

HL&P
OPERATIONAL READINESS PLAN
UNIT 2

Excellence
Through

SERVICE, TEAMWORK, PRIDE

M-1112 PRE

South Texas Project
Electric Generating Station
OPERATIONAL READINESS PLAN
Unit 2
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South Texas Project
Electric Generating Station

OPERATIONAL READINESS PLAN
Unit 2

I. Introduction and Purpose

South Texas Project (STP) Units 1 & 2 were removed from service by Houston Lighting & Power (HL&P) in February 1993, because of continuing problems with the Turbine-Driven Auxiliary Feedwater Pumps. HL&P committed not to resume power operation until the problems had been corrected. On February 5, 1993, the Nuclear Regulatory Commission (NRC) acknowledged this commitment by issuing a Confirmatory Action Letter. Subsequently in April 1993, STP was the subject of a NRC Diagnostic Evaluation, and supplements to the Confirmatory Action Letter added a number of other items to be addressed prior to startup. To support resumption of power operation and to fully address issues identified by station personnel and the NRC, STP developed an Operational Readiness Plan (Revision 0) describing the actions HL&P would take to improve STP hardware, programs, and personnel performance prior to the resumption of safe and reliable power operation. These actions addressed issues described in the NRC's Confirmatory Action Letter of February 5, 1993; the Confirmatory Action Letter Supplement, dated May 7, 1993; the second supplement to the Confirmatory Action Letter dated October 15, 1993; selected items from the NRC Diagnostic Evaluation Report of June 10, 1993; and assessments and reviews conducted by STP management. The actions included significant reductions in maintenance and engineering backlogs, major improvements in maintenance training and work processes, increased operations staffing, and reduction of burdens on plant operators. These actions were completed prior to the resumption of power operation of Unit 1.

As part of its preparation for resumption of power operation of Unit 1, HL&P conducted an extensive set of management evaluations, independent assessments, and augmented tests to ensure that personnel, hardware, and processes were well prepared. As provided in Revision 0 to the Operational Readiness Plan, these evaluations, tests and assessments addressed the specific items included in the Confirmatory Action Letter and its supplements, as well as the overall readiness of STP for startup and sustained successful operation. During these assessments and evaluations, areas where performance could be further improved were noted and follow-up action taken. Additionally, action has been taken to address issues identified by the NRC during their extensive series of inspections and reviews.

The results of these evaluations and follow-up actions substantiated that STP was ready to commence the approach to full power operation of Unit 1. Subsequently, the NRC authorized the resumption of power operation for Unit 1 on February 15, 1994.

This Operational Readiness Plan provides for a systematic and conservative approach to support the resumption of power operation of Unit 2. This plan addresses the specific issues for Unit 2 and any aspects of remaining programmatic issues which need to be resolved to support returning Unit 2 to service. Specifically, this Plan describes:

1) the processes by which readiness for resumption of power operation of Unit 2 will be assessed;

2) the methods that will be used during startup and power ascension to return Unit 2 to service safely and reliably;

3) the initiatives underway to continue improvement of facility material condition, workload management, system certification, operations staffing and readiness assessment.

The experience gained from the activities, management evaluations, independent assessments and augmented tests which supported the return of Unit 1 to power operation have been factored into this plan for Unit 2. An assessment for Unit 1 will be conducted after 10 days of full power operation. Results and recommendations from the critiques of both the Line Management Assessment Plan and the Independent Assessment Plan described in Revision 0 to the Operational Readiness Plan will be factored into the startup plan for Unit 2.

The activities covered by the Unit 2 Operational Readiness Plan have been developed and will be implemented in conjunction with the STP Business Plan, which is the overall plan for long-term safe, reliable, and efficient operation of the Station. A number of improvement initiatives that will continue beyond time of the resumption of Unit 2 power operations are being addressed through the Business Plan.

STP management will be deliberate and conservative in implementing this Operational Readiness Plan and will not return Unit 2 to service until it is satisfied that the unit can be returned to power and operated safely and reliably over the long-term and without adverse effect on the operation of Unit 1. A number of lessons will likely be learned as Unit 1 conducts power operation. These lessons will be used to develop further specific criteria and procedures for returning Unit 2 to service. The NRC will be kept informed of progress in the development of any other procedures and the implementation of this revised plan through regularly scheduled status meetings and, as appropriate, through the Senior Resident Inspector's Office.

II. Material Condition and Workload Management

A. Maintenance Workload Management

1. General

The work process is focused through the Operations Work Control Group (OWCG) to provide an effective allocation of resources and focus to optimize safe and reliable unit operations. Work progress is reported to management through Unit 2 Outage Weekly Status Reports and the Unit 2 Plan of the Day Report.

The service request backlog for Unit 2 has steadily improved since October 1993 as resources were transferred from Unit 1 to Unit 2. This was accomplished while encouraging identification of equipment problems to ensure continuous plant material condition improvements. Emphasis on workload management is being stressed for both units while Unit 1 resumes power operation.

2. Performance Measures Used to Monitor Maintenance Effectiveness for Unit 2.

Performance statistics for Maintenance are reviewed weekly by the Vice President, Nuclear Generation and his staff. Performance indicators have been designed to enable the assessment of Maintenance effectiveness and overall plant material condition.

Indicators used to monitor station material condition are:

- Inoperable automatic functions. (Goal: none that adversely affect Operations ability to perform quality rounds and handle normal work load)

- Main Control Board deficiencies. (Goal: No outstanding deficiencies that adversely effect Operations ability to effectively monitor plant conditions at each mode; with a goal of < 10 at the full power assessment plateau.)

- Preventive Maintenance (PM) deferral rate. (Goal: achieve and maintain an on-line PM deferral rate of < 5%)

- Total open Service Requests (SR). (Goal: No SRs that affect unit safety or reliability. Open SRs will be reviewed for operability and long-term affect on material condition. Trend will be analyzed to demonstrate ability to manage maintenance workload. A desired target is to reduce and maintain each unit total open SRs to <1000 power production system preventive and corrective SRs)

- Service Request generation rate. (Changes in SR generation rate are evaluated and understood to ensure threshold for deficiency identification is acceptable and the generation rate is consistent with plant condition)

B. Equipment Status and Material Condition

The following equipment and material condition issues will be addressed for Unit 2 to resolve Unit 2 specific Confirmatory Action Letter restart issues.

1. Turbine-Driven Auxiliary Feedwater Pump

The material deficiencies that caused the overspeed trip condition of the turbine-driven auxiliary feedwater pumps have been corrected. Actions taken to prevent recurrence of the root causes include improvements in maintenance and the work control process, the corrective action process, and the post-maintenance testing program.

The preventive maintenance work instructions for both Units have been revised to provide specific steps for disassembly, inspection, and reassembly of the governor valves. A complete turbine-driven auxiliary feedwater pump has been procured and refurbished for use at the maintenance training laboratory to provide more effective training of maintenance personnel.

Measures to correct the overspeed trip condition included the refurbishment and modification of the trip throttle valves, refurbishment of the governor valves, optimization of governor setup and operation, enhancement of the system's drainage capability, and removal of defective steam traps from the drain systems. These actions were initially demonstrated to be effective during previous testing in Unit 2 and confirmed during recent Unit 1 testing.

Upon resumption of power operation, the turbine-driven auxiliary feedwater pumps will be subjected to an augmented surveillance program that will confirm the reliability of the equipment. This program includes a normal surveillance run every 72 hours for the first three weeks after initial operability, weekly for the next four weeks, bi-weekly for the next six weeks, then monthly in accordance with Technical Specification requirements thereafter. Furthermore, the turbine-driven auxiliary feedwater pump surveillance test procedure has been revised to include a new requirement to perform the test with the pump in an extended standby (cold start) condition. If the pump is tested in any other condition, the test must be repeated in an extended standby condition.

This issue is considered resolved for Unit 2.

2. Essential Chillers

Modifications will be made to correct the specific material deficiencies of the essential chillers in Unit 2 similar to the modifications taken in Unit 1.

In order to assure the ability of the chilled water system to function for extended periods of time during a design basis accident under low heat load (cold weather) conditions, manual bypass valves were installed around the essential cooling water outlet valves for precise control of essential cooling water flow through the chiller condensers. A single prepositioned bypass valve setting will accommodate various load and temperature conditions and eliminate the need for additional operator action down to a 42°F essential cooling water supply temperature. Below 42°F, which occurs infrequently, the bypass valves will be monitored to assure chiller condenser pressure is appropriately maintained.

The chiller vendor is currently conducting a chiller training program for appropriate personnel and a dedicated chiller maintenance group has been established.

The post modification test in Unit 1 validated the analysis and the assumptions in the calculation for cold weather operation for both units. This issue is considered resolved for Unit 2 pending completion of modifications to the essential chiller in Train-B for Unit 2.

3. Standby Diesel Generators

The standby diesel generators in Unit 2 will be subject to the same improvements and enhancements as the standby diesel generators in Unit 1. Testing similar to the augmented testing in Unit 1 will be conducted in Unit 2. Additionally, the standby diesel generators are undergoing a System Certification program similar to the one utilized in Unit 1. The results of that program as well as the results of other on-going reliability improvement efforts will be made available to Region IV through the Senior Resident Inspector's office.

4. Tornado Dampers

The records of damper testing were reviewed. All of the tests required by the tornado damper purchase specification were conducted. Periodic preventive maintenance procedures have been revised to include manually stroking the dampers and are currently being revised to require recording values for damper spring tension for trending analysis of tornado damper performance. This revision will be completed prior to the next performance of the preventive maintenance requirement. The Severe Weather Guidelines were revised to require that following a tornado strike in the Protected Area, specific heating, ventilating and air conditioning system fans be secured to ensure that all tornado dampers can return to their normally open position, and that all tornado dampers be inspected and stroked in accordance with the preventive maintenance procedures. The tornado dampers will function as designed.

This issue is considered resolved.

5. Feedwater Isolation Bypass Valves

The same modification utilized in Unit 1 will be utilized in Unit 2 to prevent reverse flow through the valves. The valve plug will be modified to accommodate the decreased stroke requirement and the unbalanced valve trim will be replaced with a pressure-balanced trim. Vendor testing and experience in Unit 1 confirmed that the new valve design would prevent reverse flow when subjected to design pressure differentials.

The concerns regarding the qualification of the feedwater isolation bypass valve positioners and solenoids have been resolved. The positioner piping has been rerouted so the positioner no longer performs a safety function.

Stroke testing and reverse differential pressure testing were completed on all four Unit 1 feedwater isolation bypass valves prior to ascension to Mode 2. The feedwater isolation bypass valves for Unit 2 will be similarly tested.

This issue is considered resolved pending the successful completion of the testing noted above.

6. Surveillance Flow Instruments

A contributing factor to the burden of surveillance testing on Plant Operations was the classification of instrumentation for certain systems to support ASME Section XI testing. To help address this situation, a plant modification for permanent flow instrumentation in the Unit 2 Auxiliary Feedwater system has been installed and will be tested in Mode 3. In addition, permanent differential pressure gages on the Residual Heat Removal Pumps have been installed and will be tested in Mode 4. Similar modifications were successfully installed and tested in Unit 1. In addition, precision calibrations will be performed on the installed flow instruments in the Component Cooling Water Heat Exchanger outlet to the Essential Cooling Water system to preclude the use of temporary flow instruments.

Design changes have been initiated to eliminate the use of temporary flow instruments or temporary pressure gages in the surveillance tests for the following systems: Essential Chilled Water, High Head Safety Injection, Spent Fuel Pool Cooling, and Screen Wash Booster Pumps. These changes will reduce the surveillance burden previously experienced by Plant Operations.

7. Components on Increased Test Frequency

Efforts have been made to reduce the burden of surveillance testing on Operations and Maintenance and the wear and tear on components caused by the number of components included in the ASME Section XI test program that are on increased testing frequency. Many of these components were on an increased test frequency because they either exceeded the trending limits due to stroke times or because the ability to achieve repeatable test results was hampered by the available system design and instrumentation. No apparent physical deficiency existed with these components. Actions have been taken to reduce the number of components on increased test frequency by revising procedures to improve test consistency, by establishing guidelines for removing components from increased test frequency, and by installing permanent instrumentation in various systems used for Inservice Tests. Since June 1993, the total number of components has been reduced by approximately 23 items. The total station items that are on an increased test frequency has been reduced to less than 15 items. The number of components on increased testing frequency is tracked and reported to management on a weekly basis. Prior to resumption of Unit 2 power operation, management will review the number of components on increased testing frequency to ensure that the burden on Operations and Maintenance relating to the testing of these components will not adversely affect the safe operation of the plant.

8. Fire Protection Computers and Hardware

The fire protection data acquisition computer alarm descriptions for Unit 2 will be upgraded so that the CRT display includes the alarm type, fire preplan number, the instrument/zone identification, and a brief description. Additional information on the printed hard copy will include the fire preplan title and/or the alarming device location. There are three corrective action Service Requests for the Fire Detection System remaining to be worked off. All fire protection alarms are trended in order to identify repetitious alarms that indicate other components contributing to nuisance alarms. The number of nuisance alarms has subsequently been reduced.

Fire protection Service Requests have received significant attention and the backlog has been reduced to normal emergent work rates. The Business Plan addresses long-term improvements to the fire protection computers and fire detection systems.

III. System Certification Program

The System Certification Program for Unit 2 is based on the experience gained from the Unit 1 System Certification Program.

System certification is a program designed to provide additional assurance to management that performance of critical systems will be enhanced. The selection methodology for including systems or portions of systems in the certification process is based on criteria established by plant staff and engineering personnel. The important elements of the criteria included the use of probabilistic risk assessment tools, the use of a failure modes analysis on systems that could cause plant transients, and defining those systems with known past performance deficiencies.

The System Certification Program is controlled and documented by two procedures. One requires a comprehensive package that demonstrates that each selected system or subsystem has been adequately reviewed and that any outstanding items have been appropriately evaluated and dispositioned. A second procedure requires a comprehensive walkdown followed by the acceptance of the system by the Plant Manager. Deferred work items will be reviewed and approved by the Plant Manager.

Feedback from system operating experience gained during startup and power ascension testing for Unit 1 will be used to redirect any necessary Engineering or Maintenance actions to resolve system performance deficiencies or execute other corrective measures for ensuring Unit 2 system readiness. Augmented testing of equipment in Unit 2 will be based on the results of reviews of testing equipment in Unit 1.

IV. Operations Staffing

STP is committed to providing an environment that supports the safe and efficient operation of its nuclear units and to this end has taken several actions to reduce the burden placed on the Operations staff. The more significant are:

A. Staffing Initiatives

One of the keys to successful operation of STP is to have alert, responsive, well supported, and well trained personnel. This means that there should be sufficient personnel to maintain individual workloads at a reasonable level while on shift without the need of routine overtime, and to allow for continued, uninterrupted training of Operations personnel.

To achieve this initiative, a six crew operating schedule has been implemented for Unit 2. Each crew consists of five licensed and five non-licensed operators. This is an addition of one non-licensed operator per crew. To support this goal, License Class #6 was completed in October 1993 and yielded four new reactor operators and seven new senior reactor operators. License Class #7 is in progress with 19 senior reactor operator candidates and nine reactor operator candidates. The NRC examination for License Class #7 will occur in October 1994.

Other staffing increases include an additional twenty experienced non-licensed operators (ten per Unit) who have been trained and qualified. Seventeen more have entered the non-licensed operator training course. In addition, experienced operations support contract personnel are being retained to provide support. To assure continued strong operations staffing, the Business Plan includes initiatives that address optimum staffing levels, define and establish an "operator pipeline," and establish interdepartmental rotation opportunities for Operations personnel.

B. Reduction in Administrative Burden

STP is committed to assure that administrative duties on the shift crews do not dilute their ability to monitor the operation of the reactor and power generation system and support systems. Of particular concern is distraction of the Shift Supervisors from their primary duty of maintaining an overview to allow proper coordination of activities. To alleviate these burdens the following actions have been taken:

1. The Operations Work Control Group has been established and has significantly reduced the burden on the control room staff by assuming the majority of work process functions assigned to Operations.

2. A Management Senior Reactor Operator Certification course has been developed to provide personnel from other departments with a better understanding of the operation of the plant and the challenges faced by Operations personnel so they are better able to support Operations personnel. The first class is scheduled for completion during April 1994 and the second class is scheduled to start in May 1994.

3. To enhance operational emphasis on safety-related and power block systems and to further reduce the burden on the operators, the responsibility for non safety-related support systems outside the protected area has been transferred to the Technical Services Department. Also, personnel from the Technical Services Department have been qualified as Fire Brigade Leaders to reduce the dependence on plant operators to fill this responsibility.

In addition, prior to the resumption of power operation of Unit 2, a review will be made of the temporary modifications installed in Unit 2 systems to ensure that the existing temporary modifications do not degrade operator effectiveness.

C. Operator Training

To assure operator proficiency after an extended outage, each crew of Unit 2 operators will receive specific training which, as a minimum, will consist of:

1. Practice the transition from Mode 5 to Mode 3, including abnormal and emergency procedures.

2. Simulator performance of a reactor startup and a plant startup from Mode 3 to turbine roll.

3. Training on modification and design changes to Unit 2 made during the outage.

4. Specific training on steam generator tube leaks and tube ruptures.

5. Training on lessons learned during Unit 1's ascension to power operation.

V. Specific Program Enhancements

Many of the programmatic improvements which were made to support Unit 1, were implemented generically, and therefore were resolved on a Station Basis. Programmatic issues that are considered to be resolved in this manner include: Post-Maintenance Testing Program, Management of the Engineering Backlog, Fire Brigade Team Leader Training, and Emergency Preparedness.

The STP Management Team is dedicated to continuing to provide the proper environment for the raising and addressing of employee concerns. The Employee Concerns Program has been established to assure that all types of employee concerns are effectively addressed. An action plan has been implemented to enhance the program. Internal and external assessments have been scheduled to verify the effectiveness of the actions that have been taken.

Programmatic issues that continue to require close management attention are the Station Problem Reporting process and Configuration Management process. Enhancements to these processes are discussed below.

A. Station Problem Reporting

The corrective action procedure has been revised to more clearly establish line management ownership of station problem report investigations and individual responsibility for the subsequent corrective actions. All Station Problem Reports are required to be hand-carried to the shift supervisor for an initial operability, reportability and mode restraint review after initiation. An operability review process has been incorporated into the Station Problem Report procedure. This process, based on guidance provided in Generic Letter 91-18, will help assure a uniform, consistent approach to resolving emergent operability issues. A multi-discipline, peer-level screening group reviews Station Problem Reports on a daily basis to recommend event significance category and identify any operability, reportability, or operational holds.

A Problem Review Group has been developed, consisting of the Plant Managers and line managers from Operations, Engineering, Maintenance, Work Control, Nuclear Assurance, Licensing, and the Corrective Action Group. The Problem Review Group typically meets four times a week to assign the significance category and responsibility for each problem report, and to ensure that appropriate resources are applied to the investigation. This process increases problem report visibility, management's awareness of plant problems, and facilitates problem resolution by increasing departmental accountability and ownership.

The Station Problem Report database has been modified to include a "plant mode restraint" field to ensure that actions affecting operability and subsequent corrective actions are performed prior to the appropriate mode entry.

A Corrective Action Initiative Team developed a plan of action for continued enhancement of the corrective action process to ensure adequate and effective problem identification, trending, and root cause analysis, as well as corrective action identification, selection, implementation, and monitoring for timeliness and effectiveness.

Two Business Plan Initiatives have also been established for problem identification training and to foster a culture that promotes continual self-assessment and problem correction by the line organizations. A desired result is that Station personnel will routinely identify and solve problems and participate in self-assessments.

As a result of internal reviews and the NRC Operational Readiness Assessment Team observations, other improvement initiatives have been initiated:

- The categorization of SPRs is being closely monitored by Quality Assurance to ensure that root cause evaluations are performed for all significant events.

- Selected SPRs will be provided to the Problem Review Group for closure review to increase management confidence that investigations and corrective actions are focused on the substantive issues and ensure that programmatic weaknesses do not recur.

The problem report process will be periodically reviewed for effectiveness as part of the routine line management assessments, departmental self-assessments, and performance-based evaluations by independent assessment organizations. Specific performance indicators have been established to monitor the corrective action process and graphs of the performance indicators are provided weekly to senior management.

B. Configuration Management

Independent assessments noted weaknesses in programs for ensuring configuration management which resulted in unexpected equipment actuations and clearance order deficiencies. In order to address this issue, STP has implemented a Configuration Management Action Plan to identify and implement corrective actions to prevent configuration management deviations during Unit 1 operation and during the startup and power ascension of Unit 2 and subsequent operation.

The Configuration Management Action Plan establishes a standard that unanticipated actuations or other unexpected occurrences are unacceptable. Station expectations on individual procedure usage and adherence will be reinforced through personal supervisory contact in the workplace. An independent review will be conducted for the effectiveness of recent changes in the Equipment Clearance Order process. Initiatives to improve the Corrective Action process are described in the preceding section of this Operational Readiness Plan. In addition, performance standards for work practices are being reinforced for both workers and supervisors.

VI. Self-Assessment

The self-assessment process for Unit 2 will evaluate and determine the acceptability of continued operation at specific milestones including: prior to Mode 4; prior to criticality; power ascension above 50 percent power; completion of ten days of full power operation, and as determined necessary thereafter. The process will include involvement of line and senior management, independent assessment groups [Nuclear Assurance (NA), Independent Safety Engineering Group (ISEG), Plant Operation Review Committee (PORC), Nuclear Safety Review Board (NSRB), Planning, Assessment & Controls, Operational Readiness Review Panel (ORRP)], outside consultants, and industry groups such as INPO, as determined by STP management. Management effectiveness in identifying, pursuing and correcting plant problems will be a part of the self-assessment progress.

In order to assure a consistent and integrated approach to the internal assessment process, a Line Management Assessment Plan will be prepared by line management and approved by the Group Vice President, Nuclear prior to core reload. Conceptually, the plan will consist of the following elements:

- Line managers with assessment responsibilities associated with resumption of power operation defined.

- Assessment points or plateaus from Mode 4 to full reactor power.

- Line managers will prepare self-assessment checklists/plans for their functional area for each of the assessment milestones. These checklist/plans will address the hardware, program and performance issues described in this revision to the Operational Readiness Plan, including issues developed based on the lessons learned from Unit 1's ascension to power operation. The checklists will both review performance to date and readiness to proceed to the next plateau.

- Prior to advancing beyond any assessment milestone, the checklists for that plateau will be completed and reviewed. The PORC will review the checklists for those functions that directly report to the Plant Manager's organization. The ORRP will review the results of the PORC review and checklists from functions that are outside the Plant Manager's organization.

- Collectively, the Plant Manager and ORRP will report to the Vice President, Nuclear Generation on performance to-date and readiness to proceed to the next plateau.

- The Vice President, Nuclear Generation will recommend and the Group Vice President, Nuclear will approve proceeding to the next plateau.

- After reaching full power, an overall critique of the process will be conducted by the Vice President, Nuclear Generation. Lessons learned and recommendations from that critique will be factored into the STP Business Planning process, as appropriate, in order to assure sustained focus on long-term improvements.

In addition to the Line Management Assessment Plan, an Independent Assessment Plan will also be prepared and approved prior to core reload. This Independent Assessment Plan will be developed based on the lessons learned from Unit 1's ascension to power operation. Conceptually, this plan will address the following:

- An integrated surveillance/observation plan for internal assessment groups. This process will be managed and coordinated by the General Manager, Nuclear Assurance.

- A review of the Line Management Assessment Process at each assessment plateau. The plan will contain specific criteria for the assessment of the process. The General Manager, Nuclear Assurance will give the Group Vice President, Nuclear an independent opinion on readiness to proceed to the next plateau as an input on each plateau decision.

- Prior to criticality, the independent members of the NSRB will conduct a review of the decision/assessment process to date and provide that input to the General Manager, Nuclear Assurance.

- After reaching full power, the General Manager, Nuclear Assurance will conduct a critique of the lessons learned from the independent assessment process and recommendations on long-term improvements will be factored into the STP Business Planning process.

Finally, a Third-Party Review to assess STP's readiness to resume power operation of Unit 2 will be conducted. The Third-Party Review will be an independent team that will consist of senior consultants with extensive nuclear and managerial experience.

VII. Integrated Schedule for Resumption of Power Operation

A critical path schedule is being used to manage the activities to resume power operation of Unit 2. This schedule addresses current outage activities, core reload, and the ascension from Mode 4 to full power operation. This schedule displays significant outage activities, surveillances, applicable test activities and major equipment manipulations, appropriate readiness assessments, management evaluation periods and decision points. A Unit 2 Power Ascension milestone schedule is provided as Figure 1. Specific detailed schedules to support these milestones are developed. Periodic updates of these schedules will be made available to the NRC.

Maintenance activities are focused through the Operations Work Control Group (OWCG) and are included in the Integrated Schedule. This group is headed by a Senior Reactor Operator (SRO) and is staffed with qualified personnel from other functional areas. Outage Support provides 24-hour coverage to support outage activities and schedule changes. OWCG and Outage Support work closely to resolve work, schedule and resource issues. As a lesson learned from Unit 1, a line management position of Outage Director, responsible for overall management of outage activities and reporting directly to the Plant Manager, has been established. The two incumbents in these positions are the Unit 2 Assistant Operations Manager (SRO) and the Unit 2 Assistant Maintenance Manager (SRO certified).

A Unit 2 Startup and Power Ascension Plan will be developed to establish the administrative guidelines necessary to ensure that tests and evolutions having the potential to impact the plant's margin of safety are conducted with the controls necessary to meet the requirements of the operating license, applicable regulatory requirements and commitments, accepted industry practices, and approved procedures. This plan will provide guidance for tests, inspection activities, and hold points required during the STP Unit 2 startup and power ascension from entry into Mode 4 to full power. The Unit 2 Power Ascension Plan and management controls will be based on the lessons learned during the implementation of the Unit 1 Power Ascension Test Program.

Power ascension testing will be coordinated by a Power Ascension Test Manager. Additionally, a Startup Duty Manager (a Senior STP Manager) will provide continuous management representation and presence during selected evolutions throughout the power ascension program. The Startup Duty Manager's primary function will be to ensure that the exercise of command and control authority of licensed operators is not diluted by the increased level of activities. The Startup Duty Manager will also be responsible for assessing the conduct of Operations, Maintenance and other support groups, and for assessing the implementation of the Power Ascension Plan.

The Shift Supervisor retains responsibility for the safe operation of the plant, including testing. A Shift Test Coordinator will coordinate the testing sequence and will directly report to the Shift Supervisor.

The basic structure of the operating organization during power ascension is shown in Figure 2. Changes to this organization structure based on lessons learned from Unit 1 will be communicated to the Senior Resident Inspector.

VIII. Summary

The programmatic issues identified in the NRC's February 5, 1993 Confirmatory Action Letter and its supplements and the Diagnostic Evaluation were addressed prior to the restart of Unit 1. Each issue identified in the Confirmatory Action Letter and its supplements is discussed in the Unit 2 Operational Readiness Plan. Figure 3 provides a reference guide for finding each issue in this plan. The specific goals for the Unit 2 ascension to power operation are established in this Operational Readiness Plan. The experience gained during Unit 1's ascension to power operation are being utilized in preparing Unit 2 for return to service.

This Unit 2 Operational Readiness Plan details specific plans related to (1) material condition and workload management, (2) system certification, (3) operations staffing, and (4) self-assessment. The Power Ascension Plan for Unit 2 will be based on lessons learned from Unit 1's ascension to power operation. STP management will utilize a systematic and conservative approach to return Unit 2 to operation and will not return Unit 2 to service until it is satisfied that the unit can be returned to power and operated safely and reliably over the long-term. Further actions to address long-term performance improvement are being pursued through the STP Business Plan.

Figures

UNIT 2 POWER ASCENSION SCHEDULE

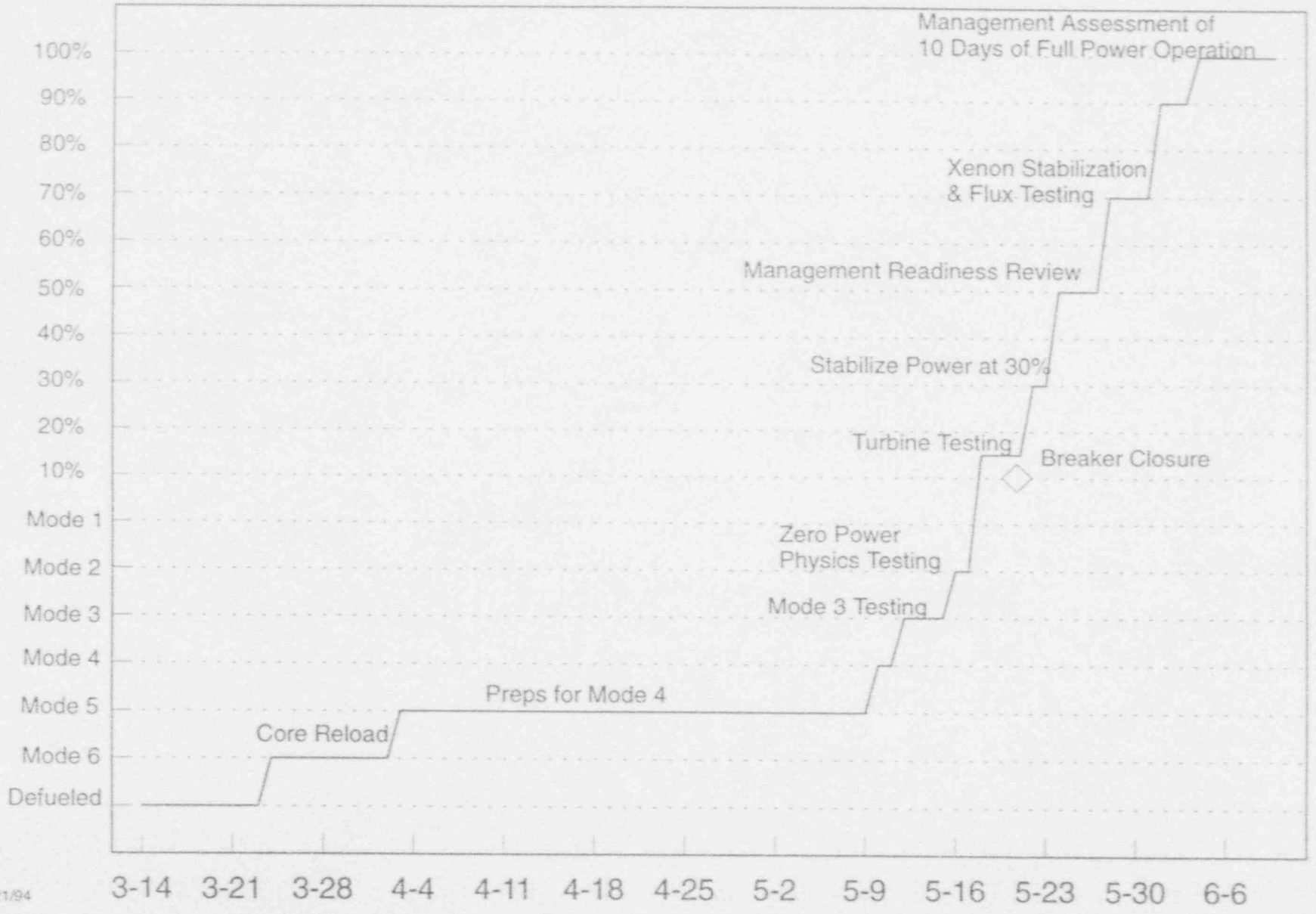

Figure 1

UNIT 2 POWER ASCENSION ORGANIZATION

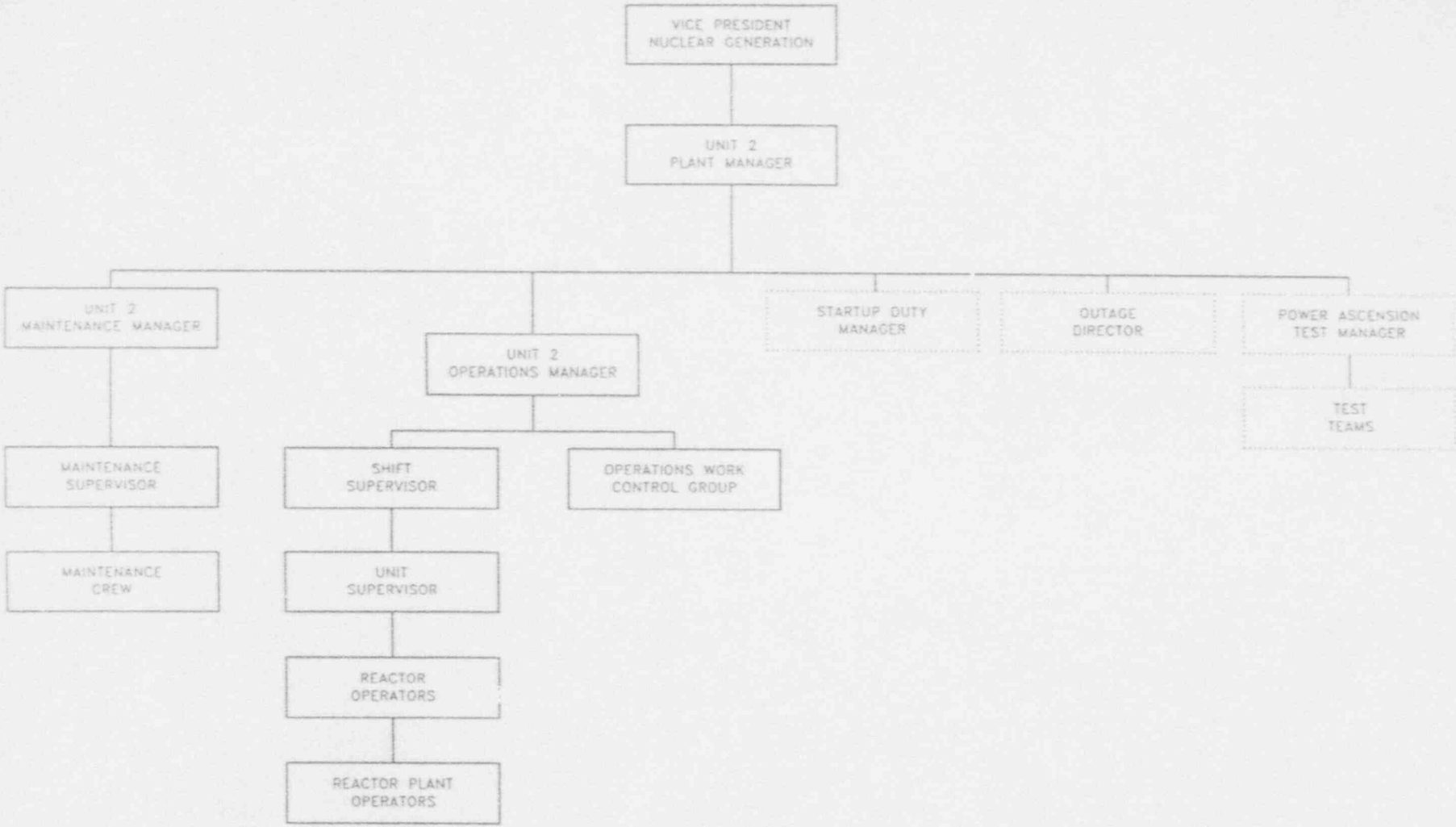

FIGURE 2

D-1019.BWG
REV. 0
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CONFIRMATORY ACTION LETTER ISSUES

	ISSUE	PAGE
1	Turbine-driven auxiliary feedwater pump	3 & 4
2	Station problem report process	10 & 11
3	Service request backlog	3
4	Post-maintenance test program	9
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6	Operations staffing	8 & 9
7	Fire brigade leader training	9
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FIGURE 3

C-0877.DWG
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Operational Readiness Plan

Action Summary

OPERATIONAL READINESS PLAN ACTION SUMMARY

I. INTRODUCTION AND PURPOSE

1.	Results and recommendations from the critiques of both the Line Management Assessment Plan and the Independent Assessment Plan described in Revision 0 to the ORP will be factored into the startup plan for Unit 2.	March 1994
2.	The activities covered by the Operational Readiness Plan will be implemented in conjunction with the Business Plan.	Ongoing
3.	STP management will be deliberate and conservative in implementing this revision to the Operational Readiness Plan and will not return Unit 2 to service until it is satisfied that the unit can be returned to power and operated safely and reliably over the long-term and without adverse affect on the operation of Unit 1.	Ongoing
4.	Lessons learned as Unit 1 conducts power operation will be used to develop further specific criteria and procedures for returning Unit 2 to service.	Ongoing
5.	The NRC will be kept informed of progress in the development of any other procedures and the implementation of this revised plan through regularly scheduled status meetings and, as appropriate, through the Senior Resident Inspector's office.	Ongoing

II. MATERIAL CONDITION AND WORKLOAD MANAGEMENT

A. MAINTENANCE WORKLOAD MANAGEMENT

6. Performance indicators have been designed to enable the assessment of Maintenance effectiveness and overall plant material condition. Indicators used to monitor station material condition are: — Prior to resumption of power operations

- Inoperable automatic functions. (Goal: none that adversely afffect Operations ability to perform quality rounds and handle normal work load)
- Main Control Board deficiencies. (Goal: No outstanding deficiencies that adversely effect Operations ability to effectively monitor plant conditions at each mode; with a goal of < 10 at the full power assessment plateau.)
- Preventive Maintenance (PM) deferral rate. (Goal: achieve and maintain an on-line PM deferral rate of < 5%)
- Total open Service Requests (SR). (Goal: No SRs that affect unit safety or reliability. Open SRs will be reviewed for operability and long-term affect on material condition. Trend will be analyzed to demonstrate ability to manage maintenance workload. A desired target is to reduce and maintain each unit total open SRs to <1000 power production system preventive and corrective SRs)
- Service Request generation rate (Changes in SR generation rate are evaluated and understood to ensure threshold for deficiency identification is acceptable and the generation rate is consistent with plant condition)

B. EQUIPMENT STATUS AND MATERIAL CONDITION

7.	The TDAFW pumps will be subjected to an augmented surveillance program that will confirm the reliability of the equipment.	Resumption of power operation
8.	Modifications to correct the specific material deficiencies of the essential chillers in Unit 2 will be made similar to the modifications taken in Unit 1.	Prior resumption of power operation
9.	The standby diesel generators in Unit 2 will be subject to the same improvements and enhancements as the SDGs in Unit 1.	Prior to resumption of power operation
	• Testing similar to the augmented testing in Unit 1 will be conducted in Unit 2.	
	• SDGs are undergoing a System Certification process similar to the one utilized in Unit 1. Results of the process will be made available through the Sr. Resident's office.	
10.	Periodic preventive maintenance procedures are currently being revised to require the recording of damper spring tension values for trending tornado damper performance.	Prior to next performance.
11.	The same modification utilized in Unit 1 feedwater isolation bypass valves will be utilized in Unit 2 to prevent reverse flow through the valves. The valve plug will be modified to accomodate the decreased stroke requirement and the unbalanced valve trim will be replaced with a pressure balanced trim. Stroke testing and reverse differential pressure testing will be completed on all four Unit 2 FWIBVs.	Prior resumption of power operation
12.	The permanent flow instrumentation in the AFW system will be tested in Mode 3.	Prior resumption of power operation
13.	The permanent differential pressure gages on the RHR pumps will be tested in Mode 4.	During Mode 4
14.	Precision calibrations will be performed on the installed flow instruments in the component cooling water heat exchanger outlet to the essential cooling water system to preclude having to use temporary flow instruments.	Prior resumption of power operation
15.	Management will review the number of components on increased surveillance testing frequency to ensure that the burden on Operations and Maintenance relating to the testing of these components will not adversely affect the safe operation of the plant.	Prior resumption of power operation
16.	The fire protection data acquisition computer alarm descriptions for Unit 2 will be upgraded so that the CRT display includes the alarm type, fire preplan number, the instrument /zone identification, and a brief description. Additional information on the printed hard copy will include the fire preplan title and/or the alarming device location.	Prior resumption of power operation

III. SYSTEM CERTIFICATION PROGRAM

17. Feedback from system operating experience gained during the startup and power ascension testing for Unit 1 will be used to redirect any necessary Engineering or Maintenance actions to resolve system performance deficiencies or execute other corrective measures for ensuring Unit 2 system readiness.	Ongoing
18. Augmented testing of equipment in Unit 2 will be based on the results of reviews of testing equipment in Unit 1.	Ongoing

IV. OPERATIONS STAFFING

19. The second Management Senior Reactor Operator Certification Course is scheduled to start in May 1994.	May 1994
20. A review will be made of the temporary modifications installed in Unit 2 systems to ensure that the existing temporary modifications do not degrade operator effectiveness.	Prior to resumption of power operation
21. To assure operator proficiency after an extended outage, each crew of Unit 2 Operators will receive specific training which, as a minimum, will consist of:	Prior to power ascension

- Practice the transition from Mode 5 to Mode 3, including abnormal and emergency procedures.
- Simulator performance of a reactor startup and a plant startup from Mode 3 to turbine roll.
- Training on modification and design changes to Unit 2 made during the outage.
- Specific training on steam generator tube leaks and tube ruptures.
- Training on lessons learned during Unit 1's ascension to power operation.

V. SPECIFIC PROGRAM ENHANCEMENTS

22. Selected SPRs will be provided to the Problem Review Group for closure review to increase management confidence that investigations and corrective actions are focused on the substantive issues of the Trend SPR so programmatic weaknesses do not recur. — Ongoing

23. The problem report process will be periodically reviewed for effectiveness as part of the routine line management assessments, departmental self-assessments, and performance-based evaluations by independent assessment organizations. — Ongoing

24. An independent review will be conducted for the effectiveness of recent changes in the Equipment Clearance Order process. — April 1994

VI. SELF ASSESSMENT

25. The assessment process will evaluate and determine the acceptability of continued operation at specific milestones including: prior to Mode 4; prior to criticality; power ascension above 50% power; completion of 10 days of full power operation; as determined thereafter. The process will include involvement of line and senior management, station assessment groups as determined by STP executive management. Management effectiveness in identifying, pursuing, and correcting plant problems will be a part of the self-assessement process. — Ongoing

26. In order to assure a consistent and integrated approach to the internal assessment process, a Line Management Assessment Plan will be prepared by line management and approved by the Group Vice President, Nuclear prior to core reload. Conceptually, the plan will consist of the following elements: — Required prior to core reload

- Line managers with assessment responsibilities associated with resumption of operations defined.
- Assessment points or plateaus from Mode 4 to full reactor power
- Line managers designated above will prepare self-assessment checklists/plans for their functional area for each of the assessment milestones. These checklist/plans will address the hardware, program and performance issues described in this Operations Readiness Plan, including issues developed based on the lessons learned from Unit 1's ascension to power operation. The checklists will both review performance to date and readiness to proceed to the next plateau.
- Prior to advancing beyond any assessment milestone, the checklists for that plateau will be completed and reviewed. The PORC will review the checklists for those functions that directly report to the Plant Manager's organization. The ORRP will review the results of the PORC review and checklists from functions that are outside the Plant Manager's organization.
- Collectively, the Plant Manager and ORRP will report to the Vice President, Nuclear Generation on performance to date and readiness to proceed to the next plateau.
- The Vice President, Nuclear Generation will recommend and the Group Vice President, Nuclear will approve proceeding to the next plateau.
- After reaching full power, an overall critique of the process will be conducted by the Vice President, Nuclear Generation. Lessons learned and recommendations from that critique will be factored into the STP Business Planning process in order to assure sustained focus on long-term improvements.

27. In addition to the Line Management Assessment Plan, an Independent Assessment Plan will also be prepared and approved prior to core reload. This Independent Assessment Plan will be developed based on the lessons learned from Unit 1's ascension to power operation. Conceptually, this plan will address the following: — Prior to core reload

    - An integrated surveillance/observation plan for internal assessment groups. This process will be managed and coordinated by the General Manager, Nuclear Assurance.
    - A review of the Line Management Assessment Process at each assessment plateau. The plan will contain specific criteria for the assessment of the process. The General Manager, Nuclear Assurance will give the Group Vice President, Nuclear an independent opinion on readiness to proceed to the next plateau as an input on each plateau decision.
    - Prior to criticality, the independent members of the NSRB will conduct a review of the decision/assessment process to date and provide that input to the General Manager, Nuclear Assurance.
    - After reaching full power, the General Manager, Nuclear Assurance will conduct a critique of the lessons learned from the independent assessment process and recommendations on long-term improvements will be factored into the STP Business Planning process.

28. A Third-Party Review to assess STP's readiness to resume power operation of Unit 2 will be conducted. The Third- Party Review will be an independent team that will consist of senior consultants with extensive nuclear and managerial experience. — Prior to Mode 4

VII. INTEGRATED SCHEDULE FOR RESUMPTION OF POWER OPERATIONS

29. A milestone schedule and specific detailed schedules to support these milestones will periodically be updated and made available to the NRC. — Ongoing

30. A Unit 2 Startup and Power Ascension Plan will be developed to establish the adminstrative guidelines necessary to ensure that tests and evolutions having the potential to impact the plant's margin of safety are conducted with the controls necessary to meet the requirements of the operating license, applicable regulatory requirements and commitments, accepted industry practices, and approved procedures. The plan will provide guidance for tests, inspection activities, and hold points required during the STP Unit 2 startup and power ascension from entry into Mode 4 to full power. The Unit 2 Power Ascension Plan and management controls will be based on the lessons learned during the implementation of the Unit 1 Power Ascension Test Program. — Prior to Mode 4

31. Power ascension testing will be coordinated by Power Ascension Test Manager. — Prior to power ascension

32. A Startup Duty Manager will provide continuous management representation and presence during selected evolutions throughout the power ascension program. The Startup Duty Manager's primary function will be to ensure that the exercise of command and control authority of licensed operators is not diluted by the increased level of activities. The Startup Duty Manager will also be responsible for assessing the conduct of Operations, Maintenance and other support groups, and for assessing the implementation of the Power Ascension Plan. — Prior to power ascension

33. A Shift Test Coordinator will coordinate the testing sequence and will report directly to the Shift Supervisor — As required

34. Changes to the basic structure of the operating organization during power ascension of Unit 2 will be based on lessons learned from Unit 1 and will be communicated to the Senior Resident Inspector.