

SCE ACTION PLAN
FOR
IMPROVEMENT OF THE OPERATION
OF
SAN ONOFRE NUCLEAR GENERATING STATION
UNITS 2 AND 3
JULY 5, 1983

8308230221 830817
PDR ADOCK 05000361
P PDR

TABLE OF CONTENTS

I. Preface	1
II. Executive Summary	2
III. Introduction	5
IV. Recommendations and Action Plan	9
V. Appendix	
1. Categorization of Major Recommendations with Specific-Recommendations	
2. MAC Report	

I. PREFACE

The purpose of this report is to describe the action plans developed for responding to recommendations made by Management Analysis Company (MAC) for improvement of the operation of San Onofre Nuclear Generating Station, Units 2 and 3.

This report addresses all of the recommendations made by MAC and includes action plans developed by SCE in response to each recommendation.

II. EXECUTIVE SUMMARY

During the high activity period associated with power ascension testing of San Onofre Units 2 and 3 concerns developed with the adequacy of regulatory compliance. These concerns resulted in a Nuclear Regulatory Commission enforcement conference with SCE on March 7, 1983.

In addition to action already underway to ensure adequate levels of compliance immediate actions were taken directly as a result of this enforcement conference. Included in these actions was engaging Management Analysis Company (MAC) to develop recommendations for the improvement of the operation of San Onofre Nuclear Generating Station, Units 2 and 3. The result of the study performed by MAC was a number of broad major recommendations and several associated specific recommendations.

The broad major recommendations are:

- o Reaffirm that safety and compliance take precedence in any conflict with schedule objectives.
- o Clearly establish that the Station is the lead organization.
- o Integrate qualified Project personnel into the Station organization.

- o Improve conditions in the control room area, focusing especially upon congestion, distractions, communications and system operability status information.
- o Complete development in specific areas of the Station Technical support function.
- o Establish a Station work management function to coordinate all work activities.
- o Integrate Start-up Maintenance into Station Maintenance.
- o Improve the reporting of compliance issues by the safety review and quality assurance functions. Also improve the tracking and timeliness of corrective action taken in response to these issues.
- o Develop top level policies and administrative control procedures which define and clarify the functions, responsibilities and accountabilities of SONGS-related organizations.
- o Improve communications between and within SONGS organizations.

SCE studied these recommendations in consultation with MAC and developed action plans for each specific recommendation within these broad major

recommendations. Individuals within SCE were assigned responsibility and a schedule was developed for implementation of each action plan item associated with each specific recommendation.

MAC stated in their report "Development and implementation of specific action plans by SCE management addressing the MAC recommendations should result in improved performance in the operation of SONGS." SCE agrees with that conclusion and also believes implementation of the specific action plans detailed in Section IV of this report will significantly improve regulatory compliance.

III. INTRODUCTION

San Onofre Nuclear Generating Station, Units 2 and 3 are duplicate 1140 MW nuclear power plants. The Nuclear Steam Supply Systems were supplied by Combustion Engineering. The Architect Engineer and Constructor was Bechtel Corporation.

A low power license for Unit 2 was granted on February 16, 1982. Fuel was loaded and initial criticality was achieved on July 26, 1982. A full power license was received on September 7, 1982 and the unit synchronized on September 20, 1982. By March 1983 Unit 2 had operated up to 50% power.

A low power license was granted on November 15, 1982 for Unit 3. Fuel loading was completed and a full power license was being requested for March 28, 1983.

In early March 1983, Unit 2 was still undergoing startup testing at the 50% power level and Unit 3 was proceeding at a pace which would result in power testing in parallel with completion of Unit 2 power testing. This resulted in a high level of activity in the Project, Station and Organizations supporting the startup and operation of San Onofre.

During this period of high activity associated with power ascension, concerns with regulatory compliance developed. These concerns resulted in a Nuclear Regulatory Commission enforcement conference with SCE on March 7, 1983.

Although SCE had already recognized the need, and was taking action, to deal aggressively with many of these compliance issues, additional immediate action was taken to respond to the enforcement conference.

This action was initiated by Mr. William R. Gould, Chairman of the Board and Chief Executive Officer. The direction provided by Mr. Gould and the current status with respect to each item is presented below:

- o Startup of Unit 3 was deferred until adequate personnel resources were available to proceed and only when it would not in any way interfere with activities proceeding on Unit 2. As of mid-June 1983, Unit 2 has achieved 100% power and most testing has been completed.
- o Unit 3 was not to be taken critical until Mr. Gould personally approves the action. This is to occur only when Unit 3 is ready to go critical and when such action will not interfere with Unit 2 safety and progress. Currently Unit 3 criticality is forecast for mid-July 1983 after virtually all Unit 2 testing is complete.
- o Based on this guidance, and the time required to assess the situation, the scheduled March 28, 1983 Unit 3 full-power license meeting with the Commission was delayed for at least 30 days. On June 22, 1983 a letter was sent to NRC requesting a full power license for Unit 3 in August, 1983.

- o In order to shorten the chain of command, Mr. David J. Fogarty, Executive Vice President, reporting directly to Mr. Gould was assigned direct and onsite responsibility for the continued startup of these units. This was to augment the organizational structure and capability already in place.
- o On March 14, 1983, Mr. Gould met on site with the key officers, managers and supervisors (35 personnel) from the Station, the Project, Quality Assurance and the Engineering, Licensing and Safety staff to insure that they understood the path to be followed. This information was then communicated to personnel in these organizations at all levels.
- o Efforts to tighten up any procedural problems and reinforce the absolute requirement for compliance as well as timely and candid communications with the NRC were increased. This effort is continuing. Disciplinary action has been taken when lapses in procedural compliance occur. More management involvement in and approval of communications with NRC has been and will continue to be required.
- o Mr. Gould talked with the senior officers of the primary contractor, Bechtel, and directed them to proceed on the same deliberate path as outlined to SCE personnel.

- o A qualified outside firm, Management Analysis Company (MAC) was engaged to independently assess all aspects of the organization and programs to startup San Onofre in order to determine the root causes of the problems and the actions required to correct them.

The objectives of the study to be conducted by MAC were:

- o Review and appraisal of the startup, power ascension and initial operation activities associated with SONGS Units 2 and 3. Rather than attempting to examine every aspect of the entire station, the effort focused on specific processes and interaction among the Engineering, Construction, Start-up, Operations and Quality Assurance (QA) organizations. Particular attention was given to activities associated with safety and regulatory compliance.
- o Determination of the key factors adversely affecting startup, power ascension, initial operation and associated management systems.
- o In conjunction with key SCE personnel, development of recommendations that will assist them in improving performance, with emphasis upon current safety and compliance issues.

This study by MAC resulted in a report to SCE entitled "Recommendation for the Improvement of the Operation of San Onofre Nuclear Generating Station, Units 2 and 3." This report is included as Appendix 2. SCE's planned actions in response to these recommendations are included in Section IV of this report.

IV. RECOMMENDATION AND ACTION PLANS

In the overview section of the MAC Report, ten major recommendations were made. In the body of the report, forty-eight recommendations were made which provide more specifics associated with each major recommendation. Appendix 1 of this report categorizes the forty-eight specific recommendations under each of the ten major recommendations. Some of the specific recommendations are applicable to more than one major recommendation and therefore appear more than once. Appendix 1 demonstrates the ten major recommendations are fully addressed by the forty-eight specific recommendations. Therefore, action plans and schedules for implementation were developed for each of the forty-eight specific recommendations. The Management Analysis Company

report is provided in Appendix 2 of this report. Tracking of the status of each action item will be accomplished by entering them into the Nuclear Engineering and Operation Department Commitment Register.

SCE had action underway for approximately 40 percent of the recommendations when MAC began their study. Where appropriate, these actions are included in the following action plans.

The format used for presentation of the action plans consists of the MAC recommendation followed by the action plan. In many cases the action plan consists of several action items.

2.0 ORGANIZATION OBJECTIVES AND PRIORITIES

MAC Recommendation

- 2.1 Management must continue to reinforce to SONGS personnel at all levels that safety and compliance are the first priority in executing their duties in support of the power ascension program and operation of the plant. This reinforcement should occur in all formal and informal communications.

Action Plan

- 2.1.1 Convene a meeting between senior management and key officers, managers and supervisors to reinforce that safety and compliance are their first priority,
- 2.1.2 Convene similiar meetings between middle management and their subordinates at all levels,
- 2.1.3 Review September 13, 1982 letter from W. R. Gould on Review Process for Nuclear Safety Concerns. Revise as appropriate to reinforce that safety and compliance are the first priority for employees in executing their duties.

- 2.1.4 Research and itemize existing policy directed to safety and compliance as a first priority. Review this material and supplement or revise as appropriate to reinforce safety and compliance as a first priority.
- 2.1.5 Document dates for CSI meetings with Operations personnel at which priorities have been discussed. Based on this review, insure that all operating section personnel have been advised that safety and compliance are the first priority.
- 2.1.6 Document formal group discussions with assigned personnel since 3/7/83 at which priorities have been discussed. Based on this review, insure that safety and compliance as the first priority has been discussed with all maintenance, technical and health physics personnel.
- 2.1.7 Obtain similar information and take similar action to that above for the Project personnel responsible for the power ascension program.
- 2.1.8 Provide required priority emphasis in regular staff meetings and at OSRC meetings.

MAC Recommendation

- 2.2 Management must take action to establish the Station as lead SONGS organization and specifically identify that the Station is responsible for resolving conflicts between safety and compliance and the power ascension schedule.

Action Plan

- 2.2.1 Review the Jurisdiction Statements for the Nuclear Operations Organization and San Onofre Nuclear Generating Station and revise as appropriate to assert lead responsibility in all matters involving safety and compliance.
- 2.2.2 Review the Jurisdiction Statements for the Project and revise as appropriate to indicate the Station is responsible for resolving conflicts between safety and compliance and the power ascension schedule.

3.0 STATION

3.1 STATION MANAGEMENT

MAC Recommendation

- 3.1.1 Make maximum use of qualified Project personnel (also processes and systems) to infuse plant knowledge and experience into the Station organization.

Action Plan

- 3.1.1.1 Identify and plan for opportunities to achieve integration.
- 3.1.1.2 Carry forward plans to integrate qualified Project personnel in the Maintenance area.
- 3.1.1.3 Identify Project processes and systems that can be utilized in the Station which have not been previously transferred. Based on this review, recommend appropriate action to utilize Project processes and systems in the Station.

MAC Recommendation

- 3.1.2 Establish development plans for each manager and supervisor. Such plans should identify specific managerial strengths and weaknesses and establish priorities and target dates for improvement.

Action Plan

- 3.1.2.1 Bring APS performance appraisal process current.

We (MAC) collected information on operations from a cross-section of the organization, including Startup and the operators themselves.

A number of positive actions have already helped the shift operations team to function more effectively. Among these are:

- Posting someone to better control access to the Control Room
- Implementation of an equipment control function
- Slowdown of Unit 3
- Additional shift overlap
- Addition of clerical and other help to the shift crew

MAC Recommendation

- 3.2.1 Although much has already been done to relieve the shift crew from distractions, more should be done. Make significant physical improvements in the shift supervisor's office to allow him to function better. It should be determined why the operators do not make significant use of the plant computer. A study should be conducted of Control Room area activities and appropriate improvements implemented.

Action Plan

- 3.2.1.1 Expedite Project work to complete physical enhancements of the shift supervisor's office.
- 3.2.1.2 Provide an assessment of progress in improving operability of the plant computer and its use in supporting operations. Based on this assessment, recommend additional changes to improve operator use of the plant computer, if appropriate.
- 3.2.1.3 Following completion of ongoing MAC equipment control work, extend study into Control Room interface/activities. Based on the results of the study, recommend appropriate improvements for implementation.

MAC Recommendation

- 3.2.2 Action should be taken to ensure that the shift supervisors get out into the plant regularly. This could be in conjunction with training periods, but it should also come at times when they can interact with equipment operators and other people on their own shifts.

Action Plan

- 3.2.2.1 Through CSI meetings, identify action needed to increase shift supervisor's surveillance of plant activities. Implement, or recommend for approval as appropriate, such action as is warranted.

MAC Recommendation

- 3.2.3 The Control Room area study recommended above should include evaluation of development of a system operability status display process. Current system operability status should be readily available to the operators. The evaluation should also consider communication of plant and system status to interfacing organizations and people.

Action Plan

- 3.2.3.1 These same items appear as part of the MAC equipment control study. Extend ongoing work to include valuation of these recommendations. Based on the results of this evaluation, propose appropriate action, if any.

MAC Recommendation

- 3.2.4 The operators will benefit greatly from improvements in plant scheduling and work coordination as identified in the following Work Management section.

Action Plan

- 3.2.4.1 Provide visibility for actions required to implement Work Management as currently planned.

MAC Recommendation

- 3.2.5 Make available to the operators a well-defined list of contacts, such as systems engineers for times when they need information or assistance.

Action Plan

- 3.2.5.1 Review and formalize, if necessary, on-shift information or assistance contacts.
- 3.2.5.2 Review and improve, if necessary, identification of Technical Department support to the operators. Note similar item identified from CSI process.

MAC Recommendation

- 3.2.6 The Technical Specifications should be reviewed for improvements and reductions in complexity.

Action Plan

- 3.2.6.1 Provide visibility to backlog of proposed changes to the Technical Specifications and identify those in preparation. Describe ongoing review process and recommend additional action that might be taken to prioritize and expedite resolution of backlog.
- 3.2.6.2 Review the Technical Specifications with Operations and identify additional changes for improvement and reduced complexity.
- 3.2.6.3 Establish a task force to systematically evaluate and revise the Technical Specification to reduce complexity.

MAC Recommendations

- 3.2.7 Make a joint effort, working with the systems engineers, to improve operations procedures and reduce repeat procedural mistakes.

Action Plan

- 3.2.7.1 Identify current activities to improve procedures and recommend how Technical Department engineers, or others, may be used to reduce procedural mistakes.

3.3 WORK MANAGEMENT

MAC Recommendation

- 3.3.1 Develop a work management function responsible for planning and coordinating maintenance, ISI, surveillance testing, design change modifications and outages. This function should be a continuous, all-shift effort with a strong, full-time work manager who reports directly to the Station Manager.

Action Plan

- 3.3.1.1 Complete planning of this function and initiate implementation processes.
- 3.3.1.2 Complete hiring of a Work Manager.

MAC Recommendation

- 3.3.2 For the long term, this function (work management) should include outage planning and management responsibility. This will establish the Station in the lead outage role. Project work during operation and outages would be integrated into the overall Station plan and schedule.

Action Plan

- 3.3.2.1 Develop recommendations on whether the Project or Station should have leadership in outage planning and management.

MAC Recommendation

- 3.3.3 Develop a management information system to support the work and outage planning function. Interim processes will have to be used until this system is developed.

Action Plan

- 3.3.3.1 Work with Material and Administrative Services plus Project representatives, to identify the scope and objectives for this system and propose assignment of responsibilities.

3.4 STATION TECHNICAL

MAC Recommendation

- 3.4.1 Define goals and objectives for Station Technical.

Action Plan

- 3.4.1.1 Itemize existing definition of goals and objectives. Recommend additions/revisions where warranted.

MAC Recommendation

- 3.4.2 Complete the development of the system engineering function which has recently been initiated. Define the functions and responsibilities. System engineers should be fully knowledgeable about the design and function of their assigned systems and components. These system engineers should be responsible for maximizing the performance of their systems. To do this, they need a sense of commitment. Systems engineers should be responsible for providing technical support to station operators, maintenance and other personnel. Specific responsibilities should include:

- ISI testing.
- Knowing, reviewing and improving the operating procedures and technical specifications.
- Being a point of contact on any problem or question related to operations, test, maintenance and modification.

- Knowing the system operability status.
- Knowing about all problems and proposed resolutions.
- Initiating plant betterment proposals.
- Reviewing design changes for maintainability and operability.

Action Plan

- 3.4.2.1 Identify current status of development, and plans for future development, of system engineering functions. Address each of the MAC proposed responsibilities for further management review.

MAC Recommendation

- 3.4.3 Supplement training on plant systems and administrative controls for the system engineers, shift engineers and STA's.

Action Plan

- 3.4.3.1 Identify current status of training, by groups addressed, and plans for future training for further management review. Recommend additional training, as appropriate.

MAC Recommendation

- 3.4.4 Provide qualified shift engineers for all shifts to provide better support.

Action Plan

- 3.4.4.1 Implement manning of qualified shift engineers for all shifts.

3.5 MAINTENANCE

MAC Recommendation

- 3.5.1 Integrate Startup Maintenance into Station Maintenance to: resolve the responsibility and accountability issue; take advantage of resources, systems and organizational units of both organizations; and, to improve maintenance planning and execution.

Action Plan

- 3.5.1.1 Carry on with the present schedule for transition and integration into a single maintenance organization under Station responsibility

MAC Recommendation

- 3.5.2 Consider integrating Instrument and Control (I&C) Maintenance into Station Maintenance to provide improved activity planning and coordination.

Action Plan

- 3.5.2.1 Describe how I&C Maintenance would be integrated with Station Maintenance and evaluate pro and con issues involved. Provide a separate evaluation for I&C Engineering.
- 3.5.2.2 Review evaluations, make recommendations and obtain approvals, and implement approved plan.

MAC Recommendation

- 3.5.3 Complete development of an integrated maintenance management information system as soon as possible.

Action Plan

- 3.5.3.1 Complete implementation of PPMIS.

4.0 SAFETY REVIEW

MAC Recommendation

- 4.1 Require the Onsite Review Committee (OSRC) to assume more oversight in reviewing plant activities, schedules and operations for regulatory compliance and safety significance.

Action Plan

- 4.1.1 Provide listing of OSRC meetings for S023 to date (e.g., monthly Technical Specification and other special topic).
- 4.1.2 Based on review of material developed in 4.1.1, develop additional criteria, as appropriate, for involvement of OSRC in plant activities.

MAC Recommendation

- 4.2 Emphasize and strengthen requirements for Nuclear Safety Group (NSG) to provide management with an overall assessment of plant safety.

Action Plan

- 4.2.1 Review the format of the NSG monthly report and the NSG Nuclear Control Board presentations and revise the contents as necessary to provide an overall assessment of plant safety. Obtain management concurrence in the suggested format.
- 4.2.2 Implement the approved format in subsequent reports and presentations.

MAC Recommendation

- 4.3 Establish a formal system for follow up and closeout of recommendations submitted by the Independent Safety Engineering Group (ISEG) and NSG.

Action Plan

- 4.3.1 Visibility of the status of NSG and ISEG recommendations will be enhanced by use of the NE&O Commitment Register (NEOCR) system. Input sheets were forwarded to the NEOCR coordinator on June 8, 1983. The next NEOCR report is expected to include these items.

MAC Recommendation

- 4.4 Improve communications and interaction between the NSG and Station by clarifying the roles and requiring NSG to spend more time at the site.

Action Plan

- 4.4.1 The NSG Supervisor will examine future work assignments and endeavor to structure the work to optimize interaction with the site.
- 4.4.2 Periodically report to management regarding amount of time spent by the group working at the site.

5.0 QUALITY ASSURANCE

MAC Recommendation

- 5.1 QA must monitor and assure performance of the line organization by providing timely information to the Vice President, NE&O. The current reporting system should be reviewed to determine if adequate emphasis is being communicated to upper management of needed corrective actions and or untimely delay of response to Nonconformance Reports (NCRs) and Corrective Action Reports (CARs). Problems should be reported in a manner which highlights the more important issues.

Action Plan

5.1.1 The Quality Assurance Organization (QAO) initiated, in April 1983, a monthly "QA Concerns" Program report, in addition to the existing Quarterly Management Report, which identifies quality problems requiring management visibility. The monthly report supplements the quarterly Report to Senior Management, and identifies problems, as deemed by the QAO, which require special management attention such as recent or potential Stop Work Orders and recurring problems shown to be adverse to safety. The Quarterly Management Report will include an attachment, listing overdue Corrective Action Requests and open Nonconformance Reports issued to SCE organizations. The report will also include graphical trend analyses and detailed assessments of known or suspected causes of CAR deficiencies. The report will be addressed to the responsible Vice Presidents.

5.1.2 Periodic QA meetings will be scheduled to address items identified in the Monthly, Quarterly and corresponding followup reports. Attendance will be solicited from:

Manager of Nuclear Operations

Manager, Station

Manager, Project Unit 1

Manager, Project Units 2 and 3

The highlights of previous reports and progress toward solutions will be discussed at these meetings. Status escalation to the Vice Presidential level will occur as necessary to assure that appropriate actions have the proper visibility for adequate completion.

5.1.3 A revised QA CAR Procedure N16.03 Revision 11 has been issued to strengthen the program. The improved program implements the February 1983 recommendations of the NUS Audit on QA effectiveness by providing a "close loop provision" in the CAR resolution process. The "closed loop" aspect begins with routine monthly meetings, effective July 1, 1983, with the Supervisor to Supervisor, Manager to Manager or escalated to the Vice President to Vice President level after 90 days delinquency to candidly ascertain the cause and provide an immediate "get-well-plan" on late CAR responses and/or corresponding implementation actions.

5.1.4 At the request and with the cooperation of Station Management, a program to prioritize CAR significance with respect to "potential nuclear safety hazards" will be developed. QAO will assess CAR deficiencies which potentially have safety significance by so noting the assessment in the CAR transmittal correspondence. This will flag to the Station that special attention appears warranted.

- 5.1.5 Additionally, the CAR program will be modified to require, on a prioritized basis, timely notification of the appropriate Vice President for CAR's representing potential nuclear safety hazards and needed corrective actions. Delays in responses to CAR's and Nonconformance Reports (NCR's) will also be included in this notification.

6.0 PROJECT ENGINEERING

MAC Recommendation

- 6.1 One SCE organization should have primary and overall responsibility for design changes throughout the anticipated long-term retrofit work. Assign responsibility for the adequacy of plant design to Project Engineering and communicate this to appropriate organizations.

Action Plan

- 6.1.1 Prepare a list of design change categories to be expected during future plant operation, e.g., component changes at one end of the spectrum and whole system changes at the other.
- 6.1.2 Prepare criteria for each design change category and recommend to NE&O and E&G Management which should be assigned to Engineering & Construction and which will be assigned to Station Technical.

6.1.3 Project and Station Technical will jointly develop design change procedures consistent with the approach approved in 6.1.2 above. These procedures will address the extent of review and level of approval by the respective organizations.

6.1.4 Integrate the results of these action items into the policy statement of Item 6.5.1.

MAC Recommendation

6.2 Assign assistant project engineers within Project Engineering and define their functions and responsibilities in conjunction with those of Station Technical to ensure compatibility of functions and establish appropriate interfaces.

Action Plan

6.2.1 Review and update the listing of Project Engineering functions, responsibilities, authority and interfaces.

6.2.2 Based on 6.2.1, develop an organization plan to handle functions, responsibilities, authority, and interfaces.

6.2.3 Review the organizational plan with interfacing organizations and obtain concurrence to insure compatibility and agreement.

6.2.4 Prepare jurisdiction and responsibility statements for Project Engineers and Discipline Group Leaders which clearly define each position, scope of responsibility and interfaces.

6.2.5 Based on 6.2.4, review and update performance expectations for each Project Engineer.

MAC Recommendation

6.3 Assess the work load, duty assignments and staffing for the onsite Project Engineering function to determine how best to improve its ability to meet performance expectations.

Action Plan

6.3.1 Review and update functions, responsibilities, authority, and interfaces of the onsite Project Engineering Site Representative and discipline personnel under his direction.

- 6.3.2 Prepare a listing of types of quantity of work items handled onsite.
- 6.3.3 Based on 6.3.1 and 6.3.2, develop criteria to establish division of responsibility between onsite and home office E&C engineering personnel.
- 6.3.4 Develop a set of generic performance expectations for onsite personnel based on project and station needs.
- 6.3.5 Based on the work load for a given period and performance expectations (6.3.4), develop criteria to determine the number of personnel required onsite.

MAC Recommendation

- 6.4 Clarify the roles of Project Engineering and Station Technical functions by establishing responsibilities of each, defining compatible goals and objectives and by working to a common set of priorities.

Action Plan

- 6.4.1 Identify existing responsibilities, goals and objectives, and priorities of Station Technical (i.e., Chemistry, I&C, STA's, etc.) and propose revised jurisdiction statements, goals, objectives and priorities, if appropriate.
- 6.4.2 Prepare a matrix of functions, responsibilities, authority, and interfaces for E&C and NE&O Engineering Organizations.
- 6.4.3 Compare the matrix with regulatory requirements and SCE Company policies, and establish roles for each organization for each function, responsibility, authority, and interface identified in 6.4.2.
- 6.4.4 Establish a joint agreement between E&C and NE&O within the constraints of the requirements developed in 6.4.3 to eliminate redundancy or overlap in functions, responsibilities, authority and interfaces.
- 6.4.5 Develop and implement a priority system which addresses station and project objectives within the constraints of personnel and fiscal resources necessary to discharge the division of responsibility established in 6.4.4.

- 6.4.6 Prepare and implement a joint Management Policy statement which defines functions, responsibilities and authority for the E&C engineering and Station Technical organizations. The Policy Statement shall prescribe remedies for disputes.

MAC Recommendation

- 6.5 Establish long-term roles for Project Engineering and Station Technical which are consistent with policies for role of Station and Project support functions.

Action Plan

- 6.5.1 Prepare and implement a joint E&C and NE&O Management Policy Statement which defines the roles and responsibilities of Project Engineering and Station Technical based on input from Items 6.1.4 and 6.4.6.
- 6.5.2 Implement changes identified in 6.4.1 above, as approved.

7.0 CONFIGURATION MANAGEMENT

MAC Recommendation

- 7.1 Complete efforts underway to update the Master Equipment List (MEL).
This work should be given a high priority.

Action Plan

- 7.1.1 Implement program to provide a complete and up-to-date MEL.

MAC Recommendation

- 7.2 Assign high priority to completing the review of the temporary modifications and to performing the necessary engineering and safety evaluations of those changes considered permanent. Establish an administrative control process for temporary modifications that clearly define conditions for their utilization.

Action Plan

- 7.2.1 Complete the review of outstanding temporary modifications and develop a schedule for implementation of permanent changes.

7.2.2 Complete updating the temporary modification program, including incorporation of INPO criteria. Resolve ISEG comments on the program.

7.2.3 Resolve all temporary modifications which involve compliance with regulatory requirements.

MAC Recommendations

7.3 Review Station and Project design change control procedures to assure compatability. These procesures should clearly define the functions and responsibilities of each. The effort should build upon the work recently completed by the Configuration Task Group for Unit 1.

Action Plan

7.3.1 Perform and document the results of the recommended review, including any clarification of functions and responsibilities which may be indicated. Provide discussion of the relationship to referenced work at S01.

7.3.2 Upon revision of Station design change control procedures, review and revise E&C QA Procedures and Test Instructions as necessary to assure compatibility.

MAC Recommendation

- 7.4 Immediate training and clarification on the use of existing procedures should be provided to those Station and Project staff personnel who are involved with design activities.

Action Plan

- 7.4.1 Provide a status of training on use of existing procedures for Station personnel for management review. Implement additional training if required for purposes of clarification.

- 7.4.2 Project staff personnel involved with design change activities have received training on the use of applicable procedures. E&C QA Procedure E&C 41-1-2, "Quality Assurance Training for NE&O and E&C Personnel" will be implemented for future training as required.

MAC Recommendation

- 7.5 Consider establishing a change management function to review, prioritize and approve all requests for changes in plant configuration.

Action Plan

The effort to develop a system to manage plant modifications was initiated in December 1982. The following action plan identifies the major milestones and the target dates for remaining activities.

- 7.5.1 Identify work categories and priority levels.
- 7.5.2 Prepare a change management policy statement and implementing procedures.
- 7.5.3 Secure NE&O Management approval and issue policy and procedures.

MAC Recommendation

- 7.6 Develop an integrated configuration status reporting system which serves the needs of both Project and Station for tracking the status of plant change requests and plant modification packages (SPR's, PFC's, DCP's temporary modifications).

Action Plan

- 7.6.1 Identify and evaluate the existing process and reporting tools for plant modifications/changes, i.e., SPR's, DCP's, Temporary Modifications.
- 7.6.2 Determine the visibility and status requirements of key Project and Station personnel.
- 7.6.3 Prepare a detailed implementation schedule defining dates for process development, report generation and tracking document integration.

MAC Recommendation

- 7.7 Resolve the problems associated with corporate document management providing timely copies of requested documents.

Action Plan

- 7.7.1 Evaluate enhancements of CDM support that can be made in the interest of timeliness and submit recommendations. Implement recommendations, as approved.

8.0 TRAINING

MAC Recommendation

- 8.1 Establish regular meetings between Station and Nuclear Training management to assess training needs and effectiveness.

Action Plan

- 8.1.1 Describe the existing network for interface between the Station and training and assess its effectiveness. Arrange for a meeting to discuss this, and schedule regular interface meetings with planned agenda.

MAC Recommendation

- 8.2 Improve training program effectiveness in the areas of supervisory training and management development.

Action Plan

- 8.2.1 Issue a memo identifying current SCE programs available in the areas of supervisory training and management development.
- 8.2.2 Include in personnel development planning extensive use of available programs.

9.0

ORGANIZATION STRUCTURE, POLICIES AND PROCEDURES

MAC Recommendation

- 9.1 Perform a complete review of functions and clarify responsibilities and accountabilities, eliminating gaps and overlap. This should be done with the objective of streamlining the organization. Specific emphasis should be placed on the Station organization and its interfaces with other organizations related to SONGS, such as Nuclear Engineering, Safety and Licensing, Project and Quality Assurance.

Action Plan

- 9.1.1 Review jurisdiction statements for functions reporting to managers and revise as appropriate. Accomplish inter-organization review of these jurisdiction statements to insure gaps and overlaps are minimized within NE&O.
- 9.1.2 Subject the jurisdiction statements produced in 9.1.1 to interdepartment review and revise as necessary.

MAC Recommendation

- 9.2 Develop top level administrative control procedures which include programmatic commitments, management policies and organizational responsibilities and interfaces.

Action Plan

- 9.2.1 Prepare an NE&O Policy Statement for management approval which sets forth the hierarchical relationship of all such procedures and provides clarification regarding organizational interfaces.

MAC Recommendation

- 9.3 Establish a clear plan and hierarchy for administrative control procedures. Top level administrative control procedures should establish requirements for procedures and instructions by the implementing organizations. The plan should address interfacing of procedures among implementing organizations.

Action Plan

- 9.3.1 Refer to action given in Section 9.2.1.
- 9.3.2 Prepare detailed plan for the development of the station programmatic procedures concept and obtain management approval.

- 9.3.3 Implement the programmatic procedures concept.

MAC Recommendation

- 9.4 Establish a control process that tracks regulatory requirements and commitments from their source to the implementing procedures.

Action Plan

- 9.4.1 Evaluate the extent to which the Configuration Control Program will meet this recommendation. Identify additional measures that would be required, if any.

MAC Recommendation

- 9.5 Much use can be made of the material currently existing in procedures. However, it is strongly recommended that existing procedures be reviewed for inconsistencies and gaps.

Action Plan

- 9.5.1 Describe current procedure review programs and policies. Obtain input from each section for this, in order to provide a complete picture for management review.

- 9.5.2 Based on the results of this review, implement additional actions, as necessary.

10.0 ORGANIZATIONAL COMMUNICATIONS

MAC Recommendations

- 10.1 Evaluate the need for additional regularly scheduled meetings with key managers of the SONGS-related organizations to improve communication of general and specific issues, review of commitments, coordination of efforts and planning. Address key interface areas, such as:

- Key managers of NE&O and QA
- Station managers

Action Plan

- 10.1.1 Conduct regularly scheduled monthly meetings with key managers of NE&O.
- 10.1.2 As required, conduct special meetings with key managers of NE&O and other appropriate Departments to review plans for major activities such as refueling or retrofit outages.

- 10.1.3 Encourage regularly scheduled staff meetings within the organizations within NE&O.

MAC Recommendations

- 10.2 Senior and middle management should communicate clearly to their subordinates the need for initiating individual face-to-face communications.

Action Plan

- 10.2.1 Discourage writing of unnecessary letters and encourage face-to-face communications within the Department.

MAC Recommendations

- 10.3 Emphasize team building to improve coordination and problem solving among key organizational units.

Action Plan

- 10.3.1 Emphasize a team building approach in the meetings to be conducted in the action plan for recommendations 10.1.
- 10.3.2 Encourage team building efforts such as the CSI meeting being conducted for the action plan for recommendations 2.1 within the Department when appropriate.

APPENDIX 1

CATEGORIZATION OF MAJOR RECOMMENDATIONS WITH SPECIFIC RECOMMENDATIONS

MAJOR RECOMMENDATION - Reaffirm that safety and compliance take precedence in any conflict with schedule objectives.

Specific recommendations

- 2.1 Management must continue to reinforce to SONGS personnel at all levels that safety and compliance are the first priority in executing their duties in support of the power ascension program and operation of the plant. This reinforcement should occur in all formal and informal communications.

MAJOR RECOMMENDATION - Clearly establish that the Station is the lead organization.

Specific recommendations

- 2.2 Management must take action to establish the Station as the lead SONGS organization and specifically identify that the Station is responsible for resolving conflicts between safety and compliance and the power ascension schedule.

3.3.2 For the long term, this function should include outage planning and management responsibility. This will establish the Station in the lead outage role. Project work during operation and outages would be integrated into the overall Station plan and schedule.

7.5 Consider establishing a change management function to review, prioritize and approve all requests for changes in plant configuration.

MAJOR RECOMMENDATION - Integrate qualified Project personnel into the Station Organization.

Specific recommendations

3.1.1 Make maximum use of qualified Project personnel (also processes and systems) to infuse plant knowledge and experience into the Station organization.

3.1.2 Establish development plans for each manager and supervisor. Such plans should identify specific managerial strengths and weaknesses and establish priorities and target dates for improvement.

MAJOR RECOMMENDATION - Improve conditions in the control room area, focusing especially upon congestion, distractions, communications and system operability status information.

Specific recommendations

3.2.1 Although much has already been done to relieve the shift crew from distractions, more should be done. Make significant physical improvements in the shift supervisor's office to allow him to function better. It should be determined why the operators do not make significant use of the plant computer. A study should be conducted of control room area activities and appropriate improvements implemented.

3.2.2 Action should be taken to ensure that the shift supervisors get out into the plant regularly. This could be in conjunction with training periods, but it should also come at times when they can interact with equipment operators and other people on their own shifts.

3.2.3 The control room area study recommended above should include evaluation of development of a system operability status display process. Current system operability status should be readily available to the operators. The evaluation should also consider communication of plant and system status to interfacing organizations and people.

3.2.4 The operators will benefit greatly from improvements in plant scheduling the work coordination as identified in the following Work Management section.

3.2.5 Make available to the operators a well-defined list of contacts, such as systems engineers for times when they need information or assistance.

3.2.6 The Technical Specifications should be reviewed for improvements and reduction in complexity.

3.2.7 Make a joint effort, working with the system engineers, to improve operations procedures and reduce repeat procedural mistakes.

3.4.2 Complete the development of the system engineering function which has recently been initiated. Define the functions and responsibilities. System engineers should be fully knowledgeable about the design and function of their assigned systems and components. These system engineers should be responsible for maximizing the performance of their systems. To do this, they need a sense of commitment. Systems engineers should be responsible for providing technical support to station operators, maintenance and other personnel. Specific responsibilities should include:

- o ISI testing.
- o Knowing, reviewing and improving the operating procedures and technical specifications.
- o Being a point of contact on any problem or question related to questions, test, maintenance and modification.
- o Knowing the system operability status.
- o Knowing about all problems and proposed resolutions.
- o Initiating plant betterment proposals.
- o Reviewing design changes for maintainability and operability.

3.4.4 Provide qualified shift engineers for all shifts to provide better support.

7.2 Assign high priority to completing the review of the temporary modifications and to performing the necessary engineering and safety evaluations of those changes considered permanent. Establish an administrative control process for temporary modifications that clearly define conditions for their utilization.

MAJOR RECOMMENDATION - Complete development in specific areas of the Station Technical support function.

Specific recommendations

3.4.1 Define goals and objectives for Station Technical.

3.4.2 Complete the development of the system engineering function which has recently been initiated. Define the functions and responsibilities. System engineers should be fully knowledgeable about the design and function of their assigned systems and components. These system engineers should be responsible for maximizing the performance of their systems. To do this, they need a sense of commitment. Systems engineers should be responsible for providing technical support to station operators, maintenance and other personnel. Specific responsibilities should include:

- o ISI testing.
- o Knowing, reviewing and improving the operating procedures and technical specifications.
- o Being a point of contact on any problem or question related to operations, test, maintenance and modification.
- o Knowing the system operability status.
- o Knowing about all problems and proposed resolutions.
- o Initiating plant betterment proposals.
- o Reviewing design changes for maintainability and operability.

3.4.3 Supplement training on plant systems and administrative controls for the system engineers, shift engineers and STA's.

3.4.4 Provide qualified shift engineers for all shifts to provide better support.

6.1 One SCE organization should have primary and overall responsibility for design changes throughout the anticipated long-term retrofit work. Assign responsibility for the adequacy of plant design to Project Engineering and communicate this to appropriate organizations.

6.2 Assign assistant project engineers within Project Engineering and define their functions and responsibilities in conjunction with those of Station Technical to ensure compatibility of functions and establish appropriate interfaces.

6.3 Assess the work load, duty assignments and staffing for the onsite Project Engineering function to determine how best to improve its ability to meet performance expectations.

6.4 Clarify the roles of Project Engineering and Station Technical functions by establishing responsibilities of each, defining compatible goals and objectives and by working to a common set of priorities.

- 6.5 Establish long-term roles for Project Engineering and Station Technical which are consistent with policies for role of Station and Project support functions.

MAJOR RECOMMENDATION - Establish a Station work management function to coordinate all work activities.

Specific recommendations

3.2.4 The operators will benefit greatly from improvements in plant scheduling and work coordination as identified in the following Work Management section.

3.3.1 Develop a work management function responsible for planning and coordinating maintenance, ISI, surveillance testing, design change modifications and outages. This function should be a continuous, all-shift effort with a strong, full-time work manager who reports directly to the Station manager.

3.3.2 For the long term, this function should include outage planning and management responsibility. This will establish the Station in the lead outage role. Project work during operation and outages would be integrated into the overall Station plan and schedule.

3.3.3 Develop a management information system to support the work and outage planning function. Interim processes will have to be used until this system is developed.

MAJOR RECOMMENDATION - Integrate Start-up Maintenance into Station Maintenance.

Specific recommendations

3.5.1 Integrate Start-up Maintenance into Station Maintenance to: resolve the responsibility and accountability issue; take advantage of resources, systems and organizational units of both organizations; and to improve maintenance planning and execution.

3.5.2 Consider integrating instrument and control (I&C) maintenance into Station Maintenance to provide improved activity planning and coordination.

3.5.3 Complete development of an integrated maintenance management information system as soon as possible.

MAJOR RECOMMENDATION - Improve the reporting of compliance issues by the safety review and quality assurance functions. Also improve the tracking and timeliness of corrective action taken in response to these issues.

Specific recommendations

- 4.1 Require the Onsite Review Committee (OSRC) to assume a more oversight in reviewing plant activities, schedules and operations for regulatory compliance and safety significance.
- 4.2 Emphasize and strengthen requirements for Nuclear Safety Group (NSG) to provide management with an overall assessment of plant safety.
- 4.3 Establish a formal system for follow-up and closeout of recommendations submitted by the Independent Safety Engineering Group (ISEG) and NSG.
- 4.4 Improve communications and interaction between NSG and Station by clarifying the roles and requiring NSG to spend more time at the site.

MAJOR RECOMMENDATION - Develop top level policies and administrative control procedures which define and clarify the functions, responsibilities and accountabilities of SONGS-related organizations.

Specific recommendations

- 7.1 Complete efforts underway to update the master equipment list. This work should be given a high priority.

- 7.3 Review Station and Project design change control procedures to assure compatibility. These procedures should clearly define the functions and responsibilities of each. The effort should build upon the work recently completed by the Configuration Task Group for Unit 1.
- 7.4 Immediate training and clarification on the use of existing procedures should be provided to those Station and Project staff personnel who are involved with design change activities.
- 7.5 Consider establishing a change management function to review, prioritize and approve all requests for changes in plant configuration.
- 7.6 Develop an integrated configuration status reporting system which serves the needs of both Project and Station for tracking the status of plant change requests and plant modification packages (SPR's, PFC's, DCP's temporary modifications).
- 8.1 Establish regular meetings between Station and Nuclear Training management to assess training needs and effectiveness.
- 9.1 Perform a complete review of functions and clarify responsibilities and accountabilities, eliminating gaps and overlap. This should be done with the objective of streamlining

the organization. Specific emphasis should be placed on the Station organization and its interfaces with other organizations related to SONGS, such as Nuclear Engineering, Safety and Licensing, Project and Quality Assurance.

- 9.2 Develop top level administrative control procedures which include programmatic commitments, management policies and organizational responsibilities and interfaces.
- 9.3 Establish a clear plan and hierarchy for administrative control procedures. Top level administrative control procedures should establish requirements for procedures and instructions by the implementing organizations. The plan should address interfacing of procedures among implementing organizations.
- 9.4 Establish a control process that tracks regulatory requirements and commitments from their source to the implementing procedures.
- 9.5 Much use can be made of the material currently existing in procedures. However, it is strongly recommended that existing procedures be reviewed for inconsistencies and gaps.

MAJOR RECOMMENDATION - Improve communications between and within SONGS organizations.

Specific recommendations

3.3.3 Develop a management information system to support the work and outage planning function. Interim processes will have to be used until this system is developed.

3.5.3 Complete development of an integrated maintenance management information system as soon as possible.

4.4 Improve communications and interaction between NSG and Station by clarifying the roles and requiring NSG to spend more time at the site.

5.1 QA must monitor and assure performance of the line organization by providing timely information to the Vice President, NE&O. The current reporting system should be reviewed to determine if adequate emphasis is being communicated to upper management of needed corrective actions and of untimely delay of response to Non-Conformance Reports (NCR's) and Corrective Action Reports (CAR's). Problems should be reported in a manner which highlights the more important issues.

- 7.7 Resolve the problems associated with corporate document management providing timely copies of requested documents.
- 8.1 Establish regular meetings between Station and Nuclear Training management to assess training needs and effectiveness.
- 10.2 Senior and middle management should communicate clearly to their subordinates the need for initiating individual face-to-face communications.
- 10.3 Emphasize team building to improve coordination and problem solving among key organizational units.

JGH:8296

APPENDIX II

RECOMMENDATIONS FOR IMPROVEMENT
OF THE OPERATION OF
SAN ONOFRE
NUCLEAR GENERATING STATION
UNITS 2 AND 3

Prepared For

SOUTHERN CALIFORNIA EDISON COMPANY
2244 Walnut Grove Avenue
Rosemead, California 91770

June 3, 1983

Management Analysis Company
Project Number: MAC-83-U026

Southern California Edison Company
Contract Number: S4100221

OVERVIEW

In March and April 1983, in response to a request from Southern California Edison Company (SCE), Management Analysis Company (MAC) performed a management diagnostic to assist SCE in identifying ways to improve operation of San Onofre Nuclear Generating Station (SONGS) Units 2 and 3. In performing the evaluation, MAC conducted over 90 interviews, reviewed many documents and made a number of on-site observations. This report identifies recommendations for improvement resulting from the evaluation.

Unit 2's power ascension program has experienced a number of unscheduled delays. Further, issues concerning regulatory compliance developed and eventually resulted in a Nuclear Regulatory Commission (NRC) enforcement meeting on March 7, 1983.

We identified a number of factors which contributed to that situation. One major factor has been the late staffing of the Unit 2 and 3 Station organization resulting in a lack of significant participation in the start-up program by Station personnel. Though this factor is mainly historical, it will require positive action by SCE management to reduce residual effects.

Fortunately, SCE has a committed and dedicated staff willing to invest the effort required to implement the positive actions required. A number of actions have been taken, including the full-time commitment of an executive vice president to address and remedy problems. In addition, the request for a full power operating license for Unit 3 has been deferred to allow primary focus on Unit 2 activities.

We identified eight principal problems during our evaluation. They are:

- A significant level of maintenance and design change activities were going on at the same time as the power ascension testing. Prior to March 1983, the two units were being brought to power with a relatively short time separation between them. When combined, these factors have had a negative impact on the power ascension program.
- The control room is a restraint to plant activity. In view of this and the above, the operators of the station were having difficulty in efficiently handling the demands being made upon them.

- The basic framework of the Station organization (the infrastructure) is relatively new, yet it must function like a well established organization.
- A natural conflict has developed between the Project's schedule orientation and the Station's safety and compliance orientation during the transition to firm operation.
- Identification, reporting and resolution of compliance issues need improvement.
- The organizations which support SONGS activities are large and complex with unclear responsibilities and accountabilities.
- Administrative control procedures are numerous, complex and inefficient.
- There are communications problems among and within SONGS organizations.

In our report, we have made recommendations which deal with these problems in various ways. Our major recommendations are to:

- Continue to reinforce that safety and compliance take precedence in any conflict with schedule objectives.
- Clearly establish that the Station is the lead organization responsible for resolving conflicts between compliance and schedule.
- Integrate qualified Project personnel into the Station organization.
- Improve conditions in the control room area, focusing especially upon congestion, distractions, communications and system operability status information.
- Complete development in specific areas of the Station Technical support function.
- Establish a Station work management function to coordinate all work activities.
- Integrate Start-up Maintenance into Station Maintenance.
- Improve the reporting of compliance issues by the safety review and quality assurance functions. Also improve the tracking and timeliness of corrective action taken in response to these issues.
- Develop top level policies and administrative control procedures which define and clarify the functions, responsibilities and accountabilities of SONGS-related organizations.
- Improve communications between and within SONGS organizations.

Development and implementation of specific action plans by SCE management addressing the MAC recommendations should result in improved performance in the operation of SONGS.

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
	OVERVIEW	-i-
1.0	INTRODUCTION	1
2.0	ORGANIZATION OBJECTIVES AND PRIORITIES	2
3.0	STATION	2
	3.1 Station Management	2
	3.2 Operations	3
	3.3 Work Management	4
	3.4 Station Technical	5
	3.5 Maintenance	6
4.0	SAFETY REVIEW	6
5.0	QUALITY ASSURANCE	7
6.0	PROJECT ENGINEERING	7
7.0	CONFIGURATION MANAGEMENT	8
8.0	TRAINING	9
9.0	ORGANIZATION STRUCTURE, POLICIES AND PROCEDURES	9
10.0	ORGANIZATIONAL COMMUNICATIONS	10

1.0

INTRODUCTION

Southern California Edison Company (SCE) has been an operating nuclear utility since 1968 when San Onofre Nuclear Generating Station (SONGS) Unit 1 was declared commercial.

In 1970, SCE announced the construction of SONGS Units 2 and 3 and in 1973 was granted a construction permit. SONGS Unit 2 is only the sixth unit to be granted a full power operating license since the Three Mile Island incident in 1979.

Unit 2 was loaded with fuel in February 1982 and is currently in power ascension testing. Unit 3 was loaded with fuel in November 1982. The request for a full power operating license for Unit 3 has been deferred in order to focus on Unit 2 activities.

Unit 2's power ascension program has experienced schedule delays, including problems with the Nuclear Steam Supply System (NSSS) and the Balance of Plant (BOP). Issues concerning regulatory compliance developed and eventually resulted in a Nuclear Regulatory Commission (NRC) enforcement meeting on March 7, 1983.

Because of this, SCE retained Management Analysis Company (MAC) to perform a management diagnostic. The objectives of the diagnostic were:

- Review and appraisal of the start-up, power ascension and initial operation activities associated with SONGS Units 2 and 3. Rather than attempting to examine every aspect of the entire station, the effort focused on specific processes and interaction among the Engineering, Construction, Start-up, Operations and Quality Assurance (QA) organizations. Particular attention was given to activities associated with safety and regulatory compliance.
- Determination of the key factors adversely affecting start-up, power ascension, initial operation and associated management systems.
- In conjunction with key SCE personnel, development of recommendations that will assist them in improving performance, with emphasis upon current safety and compliance issues.

MAC assembled a team of senior, experienced personnel to conduct a series of interviews, observations and document reviews. This team consisted of professionals with significant experience in project management, operations management, QA, organizational development and human behavior.

We interviewed more than 90 people in SCE, NRC, Bechtel, Combustion Engineering and other contractor organizations and reviewed associated documentation.

Based on our evaluation, the following recommendations for improvement are made.

2.0 ORGANIZATION OBJECTIVES AND PRIORITIES

We assessed SCE's objectives and priorities for SONGS to determine how these objectives and priorities were addressed at various levels within the company.

Recommendations

- 2.1 Management must continue to reinforce to SONGS personnel at all levels that safety and compliance are the first priority in executing their duties in support of the power ascension program and operation of the plant. This reinforcement should occur in all formal and informal communications.
- 2.2 Management must take action to establish the Station as the lead SONGS organization and specifically identify that the Station is responsible for resolving conflicts between safety and compliance and the power ascension schedule.

3.0 STATION

3.1 STATION MANAGEMENT

We assessed the role of Station management in placing the units into operation.

Recommendations

- 3.1.1 Make maximum use of qualified Project personnel (also processes and systems) to infuse plant knowledge and experience into the Station organization.
- 3.1.2 Establish development plans for each manager and supervisor. Such plans should identify specific managerial strengths and weaknesses and establish priorities and target dates for improvement.

3.2 OPERATIONS

We collected information on operations from a cross section of the organization, including Start-up and the operators themselves:

A number of positive actions have already helped the shift operations team to function more effectively. Among these are:

- Posting someone to better control access to the control room
- Implementation of an equipment control function
- Slowdown of Unit 3
- Additional shift overlap
- Addition of clerical and other help to the shift crew

Recommendations

- 3.2.1 Although much has already been done to relieve the shift crew from distractions, more should be done. Make significant physical improvements in the shift supervisor's office to allow him to function better. It should be determined why the operators do not make significant use of the plant computer. A study should be conducted of control room area activities and appropriate improvements implemented.
- 3.2.2 Action should be taken to ensure that the shift supervisors get out into the plant regularly. This could be in conjunction with training periods, but it should also come at times when they can interact with equipment operators and other people on their own shifts.

- 3.2.3 The control room area study recommended above should include evaluation of development of a system operability status display process. Current system operability status should be readily available to the operators. The evaluation should also consider communication of plant and system status to interfacing organizations and people.
- 3.2.4 The operators will benefit greatly from improvements in plant scheduling and work coordination as identified in the following Work Management section.
- 3.2.5 Make available to the operators a well-defined list of contacts, such as systems engineers for times when they need information or assistance.
- 3.2.6 The Technical Specifications should be reviewed for improvements and reductions in complexity.
- 3.2.7 Make a joint effort, working with the systems engineers, to improve operations procedures and reduce repeat procedural mistakes.

3.3 WORK MANAGEMENT

We assessed the station work activities to evaluate the impact on operations.

Recommendations

- 3.3.1 Develop a work management function responsible for planning and coordinating maintenance, ISI, surveillance testing, design change modifications and outages. This function should be a continuous, all-shift effort with a strong, full-time work manager who reports directly to the Station manager.
- 3.3.2 For the long term, this function should include outage planning and management responsibility. This will establish the Station in the lead outage role. Project work during operation and outages would be integrated into the overall Station plan and schedule.
- 3.3.3 Develop a management information system to support the work and outage planning function. Interim processes will have to be used until this system is developed.

3.4 STATION TECHNICAL

We assessed Station Technical management, its functions and its people, to increase our understanding of their roles and how effectively these roles are being carried out.

Recommendations

3.4.1 Define goals and objectives for Station Technical.

3.4.2 Complete the development of the system engineering function which has recently been initiated. Define the functions and responsibilities. System engineers should be fully knowledgeable about the design and function of their assigned systems and components. These system engineers should be responsible for maximizing the performance of their systems. To do this, they need a sense of commitment. Systems engineers should be responsible for providing technical support to station operators, maintenance and other personnel. Specific responsibilities should include:

- ISI testing.
- Knowing, reviewing and improving the operating procedures and technical specifications.
- Being a point of contact on any problem or question related to operations, test, maintenance and modification.
- Knowing the system operability status.
- Knowing about all problems and proposed resolutions.
- Initiating plant betterment proposals.
- Reviewing design changes for maintainability and operability.

3.4.3 Supplement training on plant systems and administrative controls for the system engineers, shift engineers and STAs.

3.4.4 Provide qualified shift engineers for all shifts to provide better support.

3.5 MAINTENANCE

We looked at the Start-up and Station Maintenance organizations with the objective of evaluating their roles and functions.

Recommendations

- 3.5.1 Integrate Start-up Maintenance into Station Maintenance to: resolve the responsibility and accountability issue; take advantage of resources, systems and organizational units of both organizations; and, to improve maintenance planning and execution.
- 3.5.2 Consider integrating instrument and control (I&C) maintenance into Station Maintenance to provide improved activity planning and coordination.
- 3.5.3 Complete development of an integrated maintenance management information system as soon as possible.

4.0 SAFETY REVIEW

We assessed both the on-site and off-site safety review functions to determine the degree of their effectiveness.

Recommendations

- 4.1 Require the On-Site Review Committee (OSRC) to assume more oversight in reviewing plant activities, schedules and operations for regulatory compliance and safety significance.
- 4.2 Emphasize and strengthen requirements for Nuclear Safety Group (NSG) to provide management with an overall assessment of plant safety.
- 4.3 Establish a formal system for follow-up and closeout of recommendations submitted by the Independent Safety Engineering Group (ISEG) and NSG.
- 4.4 Improve communications and interaction between NSG and Station by clarifying the roles and requiring NSG to spend more time at the site.

5.0 QUALITY ASSURANCE

We assessed the QA function to develop an understanding of its role in relation to station activities.

Recommendation

- 5.1 QA must monitor and assure performance of the line organization by providing timely information to the Vice President, NE&O. The current reporting system should be reviewed to determine if adequate emphasis is being communicated to upper management of needed corrective actions and of untimely delay of response to Non-Conformance Reports (NCRs) and Corrective Action Reports (CARs). Problems should be reported in a manner which highlights the more important issues.

6.0 PROJECT ENGINEERING

We assessed the Project Engineering function to develop an understanding of its role in relation to Station activities.

Recommendations

- 6.1 One SCE organization should have primary and overall responsibility for design changes throughout the anticipated long-term retrofit work. Assign responsibility for the adequacy of plant design to Project Engineering and communicate this to appropriate organizations.
- 6.2 Assign assistant project engineers within Project Engineering and define their functions and responsibilities in conjunction with those of Station Technical to ensure compatibility of functions and establish appropriate interfaces.
- 6.3 Assess the work load, duty assignments and staffing for the on-site Project Engineering function to determine how best to improve its ability to meet performance expectations.
- 6.4 Clarify the roles of Project Engineering and Station Technical functions by establishing responsibilities of each, defining compatible goals and objectives and by working to a common set of priorities.

- 6.5 Establish long-term roles for Project Engineering and Station Technical which are consistent with policies for role of Station and Project support functions.

7.0 CONFIGURATION MANAGEMENT

We reviewed selected areas relating to configuration identification, change control and status information reporting.

Recommendations

- 7.1 Complete efforts underway to update the master equipment list. This work should be given a high priority.
- 7.2 Assign high priority to completing the review of the temporary modifications and to performing the necessary engineering and safety evaluations of those changes considered permanent. Establish an administrative control process for temporary modifications that clearly define conditions for their utilization.
- 7.3 Review Station and Project design change control procedures to assure compatibility. These procedures should clearly define the functions and responsibilities of each. The effort should build upon the work recently completed by the Configuration Task Group for Unit 1.
- 7.4 Immediate training and clarification on the use of existing procedures should be provided to those Station and Project staff personnel who are involved with design change activities.
- 7.5 Consider establishing a change management function to review, prioritize and approve all requests for changes in plant configuration.
- 7.6 Develop an integrated configuration status reporting system which serves the needs of both Project and Station for tracking the status of plant change requests and plant modification packages (SPRs, PFCs, DCPs temporary modifications).

- 7.7 Resolve the problems associated with corporate document management providing timely copies of requested documents.

8.0 TRAINING

The nuclear training function was assessed to develop an understanding of its support of the Station staff.

Recommendations

- 8.1 Establish regular meetings between Station and Nuclear Training management to assess training needs and effectiveness.
- 8.2 Improve training program effectiveness in the areas of supervisory training and management development.

9.0 ORGANIZATION STRUCTURE, POLICIES AND PROCEDURES

A review was made of the SONGS-related organizational structure and the way that responsibilities, commitments and policies are communicated to organizational elements.

Recommendations

- 9.1 Perform a complete review of functions and clarify responsibilities and accountabilities, eliminating gaps and overlap. This should be done with the objective of streamlining the organization. Specific emphasis should be placed on the Station organization and its interfaces with other organizations related to SONGS, such as Nuclear Engineering, Safety and Licensing, Project and Quality Assurance.
- 9.2 Develop top level administrative control procedures which include programmatic commitments, management policies and organizational responsibilities and interfaces.
- 9.3 Establish a clear plan and hierarchy for administrative control procedures. Top level administrative control procedures should establish requirements for procedures and instructions by the implementing organizations. The plan should address interfacing of procedures among implementing organizations.

9.4 Establish a control process that tracks regulatory requirements and commitments from their source to the implementing procedures.

9.5 Much use can be made of the material currently existing in procedures. However, it is strongly recommended that existing procedures be reviewed for inconsistencies and gaps.

10.0 ORGANIZATIONAL COMMUNICATIONS

We examined organizational contacts, interfaces and channels of communication in order to understand how managers and supervisors commonly interact.

Recommendations

10.1 Evaluate the need for additional regularly scheduled meetings with key managers of the SONGS-related organizations to improve communication of general and specific issues, review of commitments, coordination of efforts and planning. Address key interface areas such as:

- Key managers of NE&O and QA
- Station managers

10.2 Senior and middle management should communicate clearly to their subordinates the need for initiating individual face-to-face communications.

10.3 Emphasize team building to improve coordination and problem solving among key organizational units.