U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/92-30, 50-361/92-30, and 50-362/92-30

50-206, 50-361, 50-362 Docket Nos.

License Nos. DPR-13, NPF-10, NPF-15

Southern California Edison Company Licensee: **Irvine Operations Center** 23 Parker Street Irvine, California 92718

San Onofre Units 1, 2, and 3 Facility Name:

San Onofre Nuclear Generating Station, San Clemente, Meeting at: California

Report Prepared By: D. L. Solorio,/Resident Inspector

Wong, Chief **Reactor Projects Section II**

Summary

Approved By:

A management meeting was held on October 9, 1992, to discuss the status of Unit 1 permanent shutdown planning and recent plant issues. These topics included:

- SCE Business Plan (Nuclear Organization)
- Status of Engineering Issues and Initiatives
- Engineering, Maintenance, and Operations Interface Problems
- Maintenance Issues
- Status of Individual Plant Examination

A copy of the slides used during the licensee's presentation is enclosed.



DETAILS

1. <u>Meeting Attendees</u>

Southern California Edison Company

- H. Ray, Senior Vice President, Nuclear
- H. Morgan, Vice President and Site Manager
- R. Krieger, Station Manager
- J. Reilly, Manager, Nuclear Engineering & Construction
- B. Katz, Manager, Nuclear Oversight
- R. Rosenblum, Manager, Nuclear Regulatory Affairs
- W. Marsh, Assistant Manager, Nuclear Regulatory Affairs
- K. Slagle, Deputy Station Manager
- R. Waldo, Operations Manager
- L. Cash, Maintenance Manager
- D. Breig, Manager, Station Technical
- M. Short, Manager, Site Technical Services
- G. Hammond, Supervisor, Onsite Nuclear Licensing
- D. Axline, Engineer, Onsite Nuclear Licensing
- D. Ortiz, Unit 1 Outage Manager
- D. McFarlane, Manager, Budgets and Administration
- D. Barron, Corporate Communication Representative
- S. Folsom, Corporate Communication
- R. Lee, Supervisor, Nuclear Safety Group
- A. Thiel, Manager, Electrical Systems Engineering

Nuclear Regulatory Commission

- B. Faulkenberry, Deputy Regional Administrator, Region V
- K. Perkins, Director, Division of Reactor Safety and Projects, Region V
- M. Fields, NRR Project Manager, Units 2 & 3
- H. Wong, Chief, Section 2, DRS&P, Region V
- G. Cook, Senior Public Affairs Officer, Region V
- C. Caldwell, Senior Resident Inspector
- D. Solorio, Resident Inspector
- D. O'Neal, Engineer, Office of Nuclear Reactor Regulation
- J. Moulton, Engineer, Office of Nuclear Reactor Regulation

<u>Others</u>

- P. Diehl, Reporter, Oceanside Blade-Citizen
- 2. <u>Details</u>

The meeting convened at 8:30 a.m.. Mr. Faulkenberry opened the meeting by stating that this was intended to be one of a continuing series of meetings with SCE management to discuss issues of mutual interest. Mr. Ray introduced the SCE presentation.

a. Unit 1 Shutdown Planning

Mr. Slagle initiated SCE's presentation of the Unit 1 shutdown planning schedule. Major milestones were presented including the anticipated Unit 1 coastdown beginning November 16, 1992 and a shutdown date of November 30, 1992.

The shipment of Unit 1 spent fuel would begin approximately January 11, 1993, and should be completed by February 12, 1993. Mr. Faulkenberry asked which Unit 1 fuel assemblies would be moved to facilitate off loading the core after the Unit is shutdown. Mr. Breig indicated that criteria exist to move intact fuel with the appropriate decay heat history and that approximately 49 assemblies would be moved to the Unit 3 spent fuel pool. The assemblies would be transferred in a cask that holds seven assemblies, therefore seven shipments would be required to complete the fuel movement. Mr. Ray added that although only 49 assemblies were initially planned to be moved, SCE would not rule out future needs to move more assemblies should the need arise. When questioned about the effects that the increase in the number of fuel assemblies going into the Unit 3 fuel pool would have on future storage capacity in that Unit, Mr. Breig indicated that there would be little effect on Unit 3 storage capacity and full core offload would be achievable until the year 2002. The Unit 1 core would be completely offloaded by March 10, 1993.

Mr. Slagle then discussed key licensing actions associated with the Unit shutdown. Responses to NRC questions indicated the following:

- The EP plan would change to include the credible accidents for the Unit in a shutdown configuration and would probably eliminate the need for drills.
- A series of exemption requests would be submitted to the NRC to devitalize certain areas of Unit 1, as related to the site security plan.
- SCE would submit a request for the Unit 1 certified fuel handler program and expected a response from the NRC in the first quarter of 1993.
- A few modifications would be made to more permanently tie in the spare spent fuel pool pump. Mr. Morgan indicated that there also may be piping modifications necessary should SCE decide to use the auxiliary feedwater tank for a water source after the shutdown.

A preliminary decommissioning plan is to be submitted by SCE approximately November 1, 1992, and permanent defueled Technical Specifications by approximately December 1, 1992. Mr. Faulkenberry questioned how SCE was going to phase out other systems after shutdown. Mr. Slagle replied that they plan to drain and de-energize unnecessary systems, and that there was no intention to put systems in "wet lay up." Any equipment salvage would be dependent on the age of components. Mr. Faulkenberry asked if these activities would be initiated before SCE submitted their decommissioning plan. Mr. Ray responded that he was not aware that there were any restrictions against such activities once SCE possessed a "Possession Only License." Mr. Ray reiterated that the plant will be removed from service with no intentions of returning it to service. Mr. Perkins noted that the approval of defueled Technical Specifications might have an effect on what could be salvaged. Mr. Rosenblum stated that SCE has put together a transition team to develop a detailed plan for the shutdown of the Unit.

Mr. Perkins requested that SCE discuss the schedule for staffing of the Unit. Mr. Waldo responded that for 1993, Operations staffing would average about 45 operators (staffing for the beginning of the year would be higher to accommodate activities associated with core offload). Staffing for 1994 would consist nominally of 16 operators. Mr. Waldo indicated that Senior Reactor Operators would be grandfathered, and certified as Fuel Handlers. Mr. Faulkenberry questioned how SCE planned to keep morale high over the remaining months of operation. Mr. Waldo indicated that generally, operators were doing well and did not feel an urgency for moving to other positions. Mr. Morgan stated that SCE has repeatedly stressed to operators that there will be no layoffs. SCE indicated that reductions in contractor support had already occurred and would continue. Mr. Ray indicated that he was satisfied that the staffing morale issues had been addressed, and that SCE has put forward adequate attention and will continue to do so.

When asked, Mr. Slagle stated that they expected to get into the final shutdown configuration after core offload, scheduled for March 1993. SCE would start the transition after core offload and complete the project at the end of 1993.

Mr. Faulkenberry questioned if SCE had prior experience with spent fuel movement between the three units. Mr. Morgan responded that they had moved fuel from Unit 1 to Units 2 and 3 previously. SCE planned to use the same technology, as described in a submittal to the NRC (previously approved by the NRC) for the upcoming activities associated with the Unit 1 shutdown.

With regard to the funding of the decommissioning of Unit 1, SCE stated that by the requirements of 10 CFR 50.75, \$104 million would be needed and SCE's current estimate for the nuclear aspects of decommissioning is approximately \$109 million. The total decommissioning of Unit 1 (including site restoration) is estimated by SCE to be \$211 million. SCE has collected to date approximately \$200 million into the decommissioning fund, with annual contributions of \$24 million.

b. <u>Nuclear Organization Business Plan</u>

Mr. McFarlane described SCE's approach to developing their business plan. The plan, as it was developed, was strengthened to hold people more accountable. In response to Mr. Faulkenberry's question regarding the Business Plan, Mr. Ray stated that the Plan was not a new concept, but it has evolved and now encourages more team efficiency. The enclosure to this report contains SCE's slides addressing the Business Plan.

c. Engineering Organization, Programs, and Status of Recent Issues

Mr. Riley presented SCE's progress on engineering initiatives as a continuation of discussions from the previous management meeting held in Region V. Mr. Perkins stated that during the last SALP period, SCE had continuing problems with ensuring a consistent level of performance in the area of engineering, and questioned how changes as presented would address this issue.

Mr. Riley stated that he felt that the roots of this issue were with engineering supervision and leadership not reinforcing the importance of consistency in performing activities. Additionally, Mr. Riley indicated that recent efforts directed at improving supervisory effectiveness would help achieve consistency of engineering activities. The NRC requested that SCE discuss how these efforts would help prevent further knowledge, testing, and interface weaknesses such as those that were associated with the issues discussed below.

1) Unit 1 Hydraulic Valve HV-852B

Mr. Short described the events that lead to the failure of the Unit 1 Main Feedwater Discharge/Safety Injection Isolation valve HV-852B and the lessons learned. The first failure of the engineering organization was their failure to recognize when the leak rate and the need for repeated charging of the accumulators were beyond previous experience. Once SCE recognized that there was a problem, SCE aggressively pursued corrective actions.

Mr. Short stated that initially the engineering organization denied responsibility for allowing the valve to reach an inoperable condition, but he considered that response unacceptable. Additionally, discussions with the vendor were not helpful. Mr. Short indicated that in conjunction with Mr. Riley, the engineering organizations were being encouraged to take on more ownership for their areas of expertise.

Mr. Faulkenberry asked if adequate senior management attention was devoted to the initial problems associated with HV-852B. Mr. Short responded that there was not enough management involvement at the time.

2) Operations and Engineering Divisions Interface

Mr. Breig presented SCE's characterization of recent events that resulted from an inadequate interface between the Operations (OPS) and Station Technical (STEC) organizations. He stated that these problems were attributed to weaknesses in training and procedural interface controls between organizations rather than a strict personnel interface problem. In particular, STEC procedural standards were not comparable to operations procedural standards. In addition, Mr. Breig stated that evaluations of this area were being conducted by the Nuclear Oversight organization.

Mr. Breig stated that STEC had initiated a review of their procedures (scheduled to be completed by the end of the year) to ensure interface deficiencies are eliminated. Other efforts directed at resolving these problems were the creation of a qualification guide for system engineers, additional technical training, and on the job training. STEC has set a goal for system engineers to complete the qualification guides by the end of the first guarter in 1993.

To specifically address concerns that resulted from a salt water cooling (SWC) pump seal line valve misalignment, STEC planned to enhance procedures to require verification signatures after equipment has been manipulated. Mr. Wong stated that operations did have some of the responsibility to ensure the seal water supply valve was returned to service. Mr. Waldo responded that a Senior Reactor Operator (SRO) was required to evaluate the situation when procedures other than operations procedures were being used to manipulate plant equipment. In the case of the misaligned SWC valve, that had not been done.

Mr. Perkins noted the need for SCE personnel to have a critical questioning attitude and a healthy degree of skepticism.

e. Maintenance Improvements and Recent Issues

Mr. Cash presented improvements in Maintenance organization programs (see attached slides). Mr. Perkins asked if the maintenance order backlog had been reduced and what was the rate of addition to the backlog. Mr. Cash responded that the backlog had been reduced and that maintenance order input was constant to slightly increasing.

In the area of maintenance planning, Mr. Cash indicated that Maintenance was making significant improvements as evident by the



decreasing numbers of maintenance orders rejected by the Quality Control (QC) organization. Additionally, revisions to maintenance orders had decreased 50 percent from a year ago. The current rejection rate for maintenance orders was approximately two percent.

High Pressure Safety Injection Pump Repairs

The licensee's methodology for repairs to an inoperable high pressure safety injection (HPSI) pump was discussed. Mr. Cash stated that Probabilistic Risk Assessment (PRA) was factored into their maintenance planning process. However, in the case of Unit 3 High Pressure Safety Injection (HPSI) pump PO19, SCE had to weigh the benefit to safety of quickly completing the repairs (by round the clock repairs to the pump) with that of using the most skilled resources and doing a quality evaluation of the problem. Mr. Rosenblum stated that they began the troubleshooting and repair efforts with their most skilled personnel working one shift. As they increased the knowledge base of additional personnel, SCE went to round the clock repair efforts.

Mr. Perkins asked which HPSI pumps (three each for Units 2 and 3) had been worked on using the old overhaul procedure and that required inspection to determine if bearings had been installed improperly as with Unit 3 HPSI pump PO19. Mr. Morgan responded that Units 2 and 3 HPSI pumps, 2PO18 and 3PO18, required inspection.

Mr. Perkins questioned the appropriateness of SCE's decision to work on HPSI pump 2P019 on a one shift per day basis in spite of the PRA information that indicated an approximate 10 percent increase in the potential for core damage by having this pump out of service for long periods of time. Mr. Cash responded that Mr. Morgan and Mr. Krieger challenged his decision to initially begin working the pump only one shift daily. However, they considered that HPSI P019 was a third of a kind pump that was installed for operational flexibility. As such, they were within the requirements of Technical Specifications. In addition, they considered that the benefits outweighed the risks of working on the pump one shift and having the pump inoperable for such a long period of time.

f. Individual Plant Evaluation (IPE) and PRA Overview

Mr. Lee stated SCE's current schedule for submittal of their IPE was May 1993. The Level I PRA was 95 percent complete and the Level II PRA was 65 percent complete. Comparisons were drawn against other site IPEs with SONGS 2 and 3 having one of the lowest core damage frequencies for internal events per year. The total core damage frequency of SONGS 2 and 3 is 3.5 E-5. Mr. Lee closed his presentation by stating that the best result from their IPE was the absence of unanticipated events.

3. <u>Closing Remarks</u>

Mr. Faulkenberry closed the meeting by requesting that SCE keep Region V informed of the status of Unit 1 decommissioning scheduling. Mr. Morgan suggested a meeting with Region V management at the appropriate time to facilitate this request.

Mr. Faulkenberry also stated that over the last several years, the NRC has been concerned with SCEs effectiveness in dealing with emergent problems and that based on this meeting he saw an attempt to address this problem.

The meeting adjourned at 11:10 a.m.

UNIT 1 FINAL SHUTDOWN

MAJOR MILESTONES

Begin Coastdown11/16/92Open Breakers11/30/92Begin Transshipment01/11/93Complete Transshipment02/12/93Core Offloaded03/10/93Containment Closure05/15/93SFP Thermal Equilibrium of 150°F03/20/95

FN-UIHA.C

UNIT 1 FINAL SHUTDOWN

KEY LICENSING ACTIONS

Preliminary Decommissioning Plan Submittal	11/01/92
NRC Issue Possession Only License	11/01/92
Permanently Defueled Technical Specifications	
Submittal	12/01/92
Approval	06/01/93
Emergency Plan Submittal	12/01/92
POL Certification Letter	03/11/93
Proposed Decommissioning Plan & Licensing Termination Application	11/30/94

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BASE O&M INCREM OUTAGE O&M

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---PROPOSED BUDGET---SONGS 2 & 3 O&M COST PROFILE (YOE \$ X MILLIONS @ 100% Level)



BASE O&M INCREM OUTAGE O&M

DECOMMISSIONING FUNDING FOR SONGS 1

- 10 CFR 50.75 REQUIRES APPROXIMATELY \$104 MILLION (1990\$) FOR NUCLEAR DECOMMISSIONING OF SONGS 1
- EDISON'S CURRENT DECOMMISSIONING STUDY ESTIMATES \$109 MILLION (1990\$) FOR SONGS 1 NUCLEAR DECOMMISSIONING, WHICH IS PART OF THE \$211 MILLION (1990\$) FOR SONGS 1 SITE RESTORATION
- EDISON AND SDG&E HAVE CURRENTLY COLLECTED \$200 MILLION FOR SONGS 1 SITE RESTORATION
- EDISON AND SDG&E CONTINUE TO COLLECT \$24 MILLION PER YEAR
- CURRENT "SHUTDOWN O&M EXPENSE" IS BEING RECOVERED IN RATES
- DETAILED DECOMMISSIONING PLAN TO BE SUBMITTED TO THE NRC IN 1994

BUSINESS PLAN FORMAT

- INTRODUCTORY SECTIONS
 - FORWARD
 - VISION AND VALUES
 - PRIORITIES
 - MISSION STATEMENT
- BP INCLUDES ONLY SIGNIFICANT CHANGING OR CHALLENGING ACTIVITIES
- GOALS ARE PRIORITIZED BASED ON THE FIVE NUCLEAR ORGANIZATION PRIORITIES
- HIERARCHY OF GOALS, STRATEGIES AND ACTIONS:
 - · 1. GOAL
 - 2. STRATEGIES WHICH SUPPORT THE GOAL
 - 3. ACTIONS WHICH ACCOMPLISH THE STRATEGY
- ASSIGNMENT MATRIX
- FINANCIAL INFORMATION AND PERFORMANCE INDICATORS

WHY HAVE A BUSINESS PLAN

- SIGNIFICANT CHANGES FACING THE NUCLEAR ORGANIZATION:
 - SHUTDOWN OF UNIT 1
 - COMPETITION WITH OTHER GENERATING SOURCES
 - INCREASED REGULATORY SCRUTINY
- NEED A COMPREHENSIVE LONG RANGE PLAN TO ADDRESS THE CHANGES
 - NEED TO TIE THE NUCLEAR ORGANIZATION DIVISIONS TOGETHER AS A TEAM
 - NEED TO OPENLY COMMUNICATE OUR BUSINESS PLAN TO OUR EMPLOYEES
 - NEED TO EXTEND THE CORPORATE STRATEGIC PLAN INTO THE NUCLEAR ORGANIZATION



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NUCLEAR PRIORITIES

- **1. COMPLIANCE WITH SAFETY REQUIREMENTS**
- 2. RECOGNITION FOR COMPLIANCE
- 3. ADHERENCE TO BUDGET LIMITATIONS
- 4. OPTIMIZE ELECTRICAL PRODUCTION
- 5. PUBLICLY RECOGNIZED EXCELLENCE

FUTURE STATUS AND UPDATES OF BP

- ACTION ITEMS WILL BE STATUSED QUARTERLY, BEGINNING 1/1/93
- BP WILL BE REVISED AND UPDATED ANNUALLY
- STATUS AND UPDATES WILL BE COORDINATED BY B&A DIVISION





Southern California Edison

Status of Engineering Issues and Initiatives

- 1. Integration of Site Engineering Organizations into the Engineering Improvement Program
 - Focus on NEDO, Station Technical and Site Support Services
- 2. Status of Key Areas of Ongoing Development
 - Improvements in Process and Methods
 - Improvements in Personnel Performance
 - Current Emergent Engineering Issues

Improvements in Process and Methods

- Quality Action Teams (QATs)
- Calculation Standard
 - MOV Software
 - Setpoint Software
- In Process Monitoring

Improvements in Personnel Performance

- Benchmarking
- Supervisor Selection Process
- QAT on Supervisory Training
- Engineering Diagnostic Review
 - Atlas Consulting Group
 - Corporate Systemics Incorporated



San Onofre Unit 1

- Timeline
- Assessment
- Actions

Timeline

- Feb/Mar minor leakage
- Mid-April leakage increased
 - Major effort to locate the leaks
- May Operability assessment
 - Vendor consultations
 - Confirm other valves not affected
 - Develop a method to verify piston location

Actions

- All other actuators with similar potential inspected
- On-line re-charge practices have been modified to include UT
- Focus on supervisory performance
 - Recognition
 - Knowledge required by systems engineers
 - Timeliness of assessments

ENGINEERING OPERATIONS INTERFACE

Events

AFW IST Control Room Interface

Salt Water Cooling Pump Sealwater Lineup

Cause

Training

Procedural Control

Engineering Operations Interface









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MAINTENANCE PLANNING

HUMAN PERFORMANCE & SUPERVISORY EFFECTIVENESS

WORK PROCESS

ACTIONS

- WORK AUTHORIZATION TASK FORCE
 - Moved Process outside of Control Room
 - Relocated Work Authorization Coordinator & Maintenance General Foreman
 - Established Work Process Oversight Committee
- ON LINE SCHEDULING
 - Long Range Schedule Developed with safety equipment outages scheduled once per cycle
 - Established work window managers to coordinate planning and implementation of work
 - PRA reviews of selected work schedules

RESULTS

- IMPROVED OPERATIONS MAINTENANCE INTERFACE
- MAINTENANCE ORDER BACKLOG REDUCED
- INCREASE IN WORK COMPLETED AS SCHEDULED
- SAFETY SYSTEM AVAILABILITY HAS IMPROVED
- PLANNED MAINTENANCE CONTRIBUTION TO PLANT RISK REDUCED

SAN ONOFRE NUCLEAR GENERATING STATION WORK CONTROL SYSTEM INDICATORS LAST 12 MONTHS



Dates

Backlog

SAS10281

MAINTENANCE PLANNING

ACTIONS

- RELOCATION & REORGANIZATION OF UNITS 2/3 PLANNERS
- ISSUED PLANNERS GUIDE
- DEVELOPED PLANNER TRAINING PROGRAM

RESULTS

- QC REJECTS OF MAINTENANCE ORDER PLANS REDUCED
- NUMBER OF MAINTENANCE ORDERS RETURNED TO PLANNING FOR REVISION REDUCED

PLANNING REJECTION RATE 1988 AND 1992



→ REJECTION RATE *12 MONTH AVERAGE

→ REJECTION RATE * 12 MONTH AVERAGE

HUMAN PERFORMANCE & SUPERVISORY EFFECTIVENESS

ACTIONS

- OBSERVATION TRAINING
- COACHING & COMMUNICATION OF EXPECTATIONS

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- PERFORMANCE ASSESSMENT REVIEW
- MONITORING AND FEEDBACK
- ROOT CAUSE TRAINING & COACHING PROGRAM

RESULTS

- REDUCTION IN MAINTENANCE RELATED EVENTS
- ATTRITION SIGNIFICANTLY REDUCED
- NO OBSERVED PERFORMANCE CONCERNS DURING RECENT EVALUATION
- TURNOVERS & TAILBOARDS NOTED AS A STRENGTH

Station Maintenance





IPE Status

Level 1: 95% complete

Level 2: 65% complete

Submittal date: May 1, 1993

Comparison with Other IPEs

PWR

CDF for Internal Events /yr

~ ^ ^ /
3.2E-4
9.9E-5
~9E-5
9.0E-5
6.3E-5
6.1E-5
5.7E-5
5.6E-5
5.5E-5
5.5E-5
3.5E-5
3.1E-5
4E-6

Level 1 Preliminary Results



Total Core Damage Frequency ~ 3.5E-5 /yr





Anticipated Impact

Possible minor design modifications

Several procedure changes