



Southern California Edison Company

23 PARKER STREET

IRVINE, CALIFORNIA 92718

F. R. NANDY
MANAGER OF NUCLEAR LICENSING

November 16, 1989

TELEPHONE
(714) 587-5400

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Subject: Docket No. 50-206
Eighth Edition of the Integrated Implementation Schedule (IIS)
San Onofre Nuclear Generating Station
Unit 1

Reference: Letter, M. O. Medford, SCE, to NRC, dated December 30, 1988

This letter provides the eighth edition of the San Onofre Unit 1 Integrated Implementation Schedule (IIS). SCE is required by License Condition 3.J, "Integrated Implementation Schedule" to provide semi-annual updates of schedules to the NRC. This letter is being submitted to meet the requirements of that license condition even though much of the enclosed information was provided by a letter dated October 2, 1989 from Mr. Harold B. Ray, SCE, to the NRC on the related subject of FTOL Open Items. The enclosure to this letter reflects the information provided in Mr. Ray's letter and adds information on other non-FTOL projects as well as status information required to be provided by the IIS Program Plan identified in the license condition.

If you have any questions on the enclosure or if you require additional information, please contact me.

Very truly yours,

A001
1/1

Enclosure

cc: J. B. Martin, Regional Administrator, NRC Region V
C. Caldwell, NRC Senior Resident Inspector, San Onofre Units 1, 2 and 3

8911210223 891116
PDR ADOCK 05000206
P PDC

INTEGRATED IMPLEMENTATION SCHEDULE
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1

Eighth Edition
November 1989

Introduction

License Condition 3.J, "Integrated Implementation Schedule," requires SCE to follow the IIS Program Plan ("Plan"). The Plan specifies that periodic schedule updates be submitted to the NRC along with specific information regarding progress in implementing NRC requirements, changes since the previous report, reasons for schedule changes and the expected percentage allocation of resources on regulatory vs. betterment projects. This document is the eighth edition of the IIS which provides that information and reflects commitments made by Mr. Harold B. Ray in his October 2, 1989 letter to the NRC.

Progress in Implementing NRC Requirements

Since submittal of the last IIS update in December 1988, SCE completed the scheduled Cycle 10 refueling outage. During the outage, the plant was refueled, extensive maintenance was performed and progress was made on certain IIS projects. During the outage, the following projects were completed:

- Automation of Third Auxiliary Feedwater Pump
- Steam/Feedwater Mismatch Trip Modifications
- Automatic Termination of Safety Injection Pumps on Low RWST Level
- Single Failure Analysis Modifications
- Automatic Slow Start Modifications for Emergency Diesel Generators
- Addition of Back-up Nitrogen System for FCV's 456, 7, 8
- LLRT Provisions for CV's 702 A, B, C, D
- Back-up Nitrogen Systems Modifications
- Battery Charger Train Alignment
- Anaconda Cable Replacement

One additional project, Automatic Vent System for the Boric Acid System, was also substantially completed during the outage but required additional modifications as a result of startup testing. These modifications are now complete and final testing is scheduled for completion by November 30, 1989.

The following evaluations listed in the seventh edition of the IIS have been completed:

- FSA Update
- Station Blackout Evaluation

Projects Added Since Last Edition

There have been several projects added to the IIS since the seventh edition. The major addition is a project to install a reactor vessel level indicating system (RVLIS). This project is required by NRC order and has therefore been

added to schedule A. RVLIS is scheduled to be implemented during Cycle 12. (While the order to install RVLIS specifies Cycle 11 implementation, SCE has submitted a request to extend the implementation date to Cycle 12. This request was submitted by letter dated November 1, 1989.) Another project added to Schedule A is the addition of a plant reference simulator. Since the implementation schedule for the simulator may be after the date to meet the requirements of 10 CFR 55.45, this project will also be the subject of a separate submittal. Other projects have been added to Schedule B. These are:

- 480V Overload Modifications
- EQ of Hot Leg Recirculation
- Permanent Fix for CCW Valves
- Refueling Water Level Indication
- Turbine Deck Steel Plating (NUREG-0612)
- Safety Parameter Display System
- Safety Injection System Recirculation Modification

Brief descriptions of each project follow for information.

Recent evaluations by SCE have revealed that under certain post accident conditions, the 480 V electrical system breakers, transformers and cables may become overloaded. Modifications will be made to the system during Cycle 11 to eliminate the overload condition.

SCE has determined in a review of USI A-45 (shutdown decay heat removal requirements) that upgrading the environmental qualification (EQ) of the hot leg recirculation system would provide a worthwhile benefit to plant safety. This upgrade will be completed no later than the Cycle 11 refueling outage. Further information leading to SCE's decision to implement this modification is provided as Attachment 2.

During the Cycle 10 refueling outage, a single failure susceptibility was identified in the Component Cooling Water system (CCW). An interim modification was completed during the outage to allow safe operation for one fuel cycle. A permanent fix will be installed during the Cycle 11 refueling outage.

The RCS mid-loop water level indication modification is being installed in response to Generic Letter 88-17 to upgrade the ability of the operators to monitor water level in the RCS during mid-loop operations. The modification will allow for local indication and additional control room indication of RCS refueling water level using permanently installed piping as opposed to the current redundant local indicating method using a Tygon tube. This modification will be completed during the Cycle 11 refueling outage.

As part of the evaluation in response to NUREG-0612, it has been determined that potential dropping of heavy loads on the turbine deck may impact some safety related equipment. To mitigate this, steel decking will be installed during the Cycle 12 refueling outage.

SCE will implement a SONGS 1 plant specific reference simulator to comply with the simulator rule. Our present expectation is that we will implement the simulator in mid-1992 unless unforeseen circumstances show this to be impractical or unfeasible (e.g., CRDR results may change the Control Room such

that it impacts the simulator design schedule). A request to postpone implementation beyond that required to meet 10 CFR 50.45 will be the subject of separate correspondence.

SCE will install a safety parameter display system to comply with TMI Action Item I.D.2 (NUREG-0737) during the Cycle 12 refueling outage. To increase the availability of the safety injection recirculation function, SCE will be modifying the system during the Cycle 12 refueling outage. A section of line will be added to the residual heat removal (RHR) pump suction, along with motor operated valves, to allow the RHR system to pump water from the containment sump to the RCS. Thus, the RHR system will be a backup to the SIS recirculation system.

Projects Changed Since Last Edition

The following projects have been rescheduled, eliminated or have had changes in resolution approach since the last edition of the IIS:

- Control Room Design Review Modifications
- On-Site Toxic Gas Source Modifications
- Safety Injection System Modifications
- RCP Trip Removal
- Tornado Modifications
- High Energy Line Break Analysis

A brief description of each change follows.

Control Room Design Review (CRDR) modifications were previously scheduled to be completed during the Cycle 12 and Cycle 13 refueling outage. Present plans call for completion of all CRDR modifications during the Cycle 12 refueling outage.

Modifications were previously planned to be completed during the Cycle 11 refueling outage to allow for detection of toxic gases at SONGS 1. SCE has shown through conservative analysis that toxic gases do not need be considered as part of the SONGS 1 design basis. Thus, the need for these modifications has been eliminated.

Safety Injection System Modifications previously planned for implementation in Cycle 11 have been rescheduled for Cycle 12 because the complexity of the modification, which will be installed in conjunction with the safety injection system recirculation improvements previously described, does not allow time for completion of engineering design to support implementation in the Cycle 11 refueling outage.

SCE has decided to not remove the RCP trip function as previously planned because of the potential negative impact on the electrical system dynamic response.

SCE plans to perform an analysis demonstrating that plant modifications to mitigate postulated tornado missiles and wind loads are not required for SONGS 1 due to the low safety significance of this issue. We will then be requesting NRC agreement to withdraw our commitments in this area.

SCE's High Energy Line Break Analysis (HELBA) is currently under NRC review. SCE will be proposing new criteria and methodology for resolution of this issue. Therefore, we request that the NRC halt review of our HELBA submittal. Our current schedule is to provide a submittal describing our plans for performance of this work in the first quarter of 1990. Modifications, if extensive, will likely occur post Cycle 12.

Expected Allocation of Resources for Upcoming Outage

Allocation of resources for SONGS 1 capital additions during the Cycle 11 refueling outage is estimated to be essentially 100% regulatory.

Updated Schedules

Schedules A, B and C are included as Attachment 1.

IIS SCHEDULE A
(RULE, REGULATION OR ORDER)

Cycle 11

Anticipated Transients Without Scram
Diverse Turbine Trip

Cycle 12

Reactor Vessel Level Indicating System
Simulator (Non-Outage Related-Current Schedule is Mid 1992)

IIS SCHEDULE B
(NRC COMMITMENTS AND OTHER REQUIREMENTS)

Cycle 11

CCW Permanent Fix
Charging Pump Motor Rewind
Design Basis Precipitation Modifications (Rooftop Drainage Improvements)
480V Overload Modifications
EQ of Hot Leg Recirculation System
Mid-Loop Water Level Indication

Cycle 12

Safety Injection Recirculation System Modifications
Safety Injection System Improvements
NUREG-0612 Turbine Deck Steel Plating
Safety Parameter Display System
Control Room Design Review Modifications (All Groups)
Upgrade Core Exit Thermocouples (To be implemented with the Schedule A
RVLIS project)
Control Room Habitability
CVCS Valves MOV-LCV-1100 B,C,D
Addition of Synchrocheck Relays to Emergency Diesel Generators
Undervoltage Relays for Protection from
Degraded Grid Voltage (SEP VIII-1.A)
Waste Gas Decay Tank Monitoring Instrumentation
Inservice Test Modifications

Cycle 13

None

IIS SCHEDULE B
(NRC COMMITMENTS AND OTHER REQUIREMENTS) (Continued)

Ongoing Evaluations Requiring SCE Submittal

SEP Topics III-5.A, Effects of Pipe Breaks on	March 31, 1990
III-5.B, Structures, Systems and	
III-7.B, Components Inside Containment,	
V-5 Pipe Break Outside Containment	
SEP Topics IV-7.C.2, Failure Mode Analysis	April 30, 1990
IX-3	(Completion of re-analysis, and necessary modifications will be completed during Cycle 12 refueling outage).
SEP Topic XV-1, Decrease in Feedwater Temperature,	TBD
Increase in Feedwater Flow, Increase	
In System Flow, and Inadvertent Opening	
of a Steam Generator Relief or Safety	
Valve	
SEP Topic III-2, Tornado Missiles and Wind Loading	TBD
III-4A,	
VII-3	
Reg. Guide 1.97, Post-Accident	- Vital Bus Separation
Indication Analysis	April 1991
(Two Separate Submittals)	- Non Single Failure
	Issues
	December 31, 1989
SEP Topic V-11.B, Residual Heat Removal System	December 31, 1989
Interlock Requirements	
(Overpressure Mitigation System)	
* TMI II.C.3.5, RCP Trip	TBD
SEP Topic VIII-1.A, Adequacy of Station Voltage	TBD
* USI A-46, Seismic Adequacy of Equipment	September 30, 1992
	(Walkdowns, any necessary modifications will be completed post Cycle 12)
Individual Plant Examination	November 1992

IIS SCHEDULE C
BETTERMENT PROJECTS

Cycle 11

None

Cycle 12

To Be Determined

HOT LEG RECIRCULATION ENVIRONMENTAL QUALIFICATION UPGRADE

As part of SCE's review of the Environmental Qualification status of equipment deferred as part of 10 CFR 50.49, we have determined that the hot leg recirculation system should be upgraded on an expedited schedule. The purpose of hot leg recirculation (HLR) is to prevent boron precipitation in the reactor during a cold leg LOCA.⁽¹⁾ Prior to issuance of 10 CFR 50.49 in January 1983, HLR was variously classified as required for "long-term cooling" or "cold shutdown" in the event of an RCS cold-leg LOCA.⁽²⁾ After the issuance of 10 CFR 59.49, Environmental Qualification (EQ) of Decay Heat Removal (DHR) systems was included in USI A-45 for resolution. This meant that the EQ status of HLR was deferred until resolution of USI A-45.

During the period between the issuance of 10 CFR 50.49 in January 1983 and September 1988, several letters were exchanged between the NRC and SCE concerning EQ of equipment at SONGS 1.^(3,4,5) One of the conclusions of these letters was that HLR was a cold shutdown function and thus EQ of HLR components would be deferred.

In September 1988, the NRC issued SECY-88-260 (shutdown DHR requirements [USI A-45]). The conclusions from SECY-88-260 were based on insights gained from decay heat removal risk assessments for six operating reactors together with the operating history of DHR failures. These conclusions were:

- 1) Risk due to loss of DHR could be unduly high for some plants;
- 2) DHR failure vulnerabilities, and the optimum corrective actions for those vulnerabilities, are strongly plant specific;
- 3) Detailed plant specific analyses under the individual plant evaluation (IPE) program, including anticipated future extension of the IPE program which will require consideration of externally initiated events, will be needed to resolve this issue.

Thus, resolution of the HLR EQ issue could be deferred until completion of the SONGS 1 IPE currently scheduled for November 1992.

Based on current SCE risk evaluations, the probability of a cold leg LOCA exceeds the $1\text{E-}05$ goal discussed in SECY-88-260 for "any identified broad class of events" (e.g., failure of shutdown decay heat removal [DHR]). Thus, without even considering other contributions to failure of shutdown DHR, failure due to a cold leg LOCA of HLR components which do not meet EQ requirements should be addressed.

Although the probability of HLR failure due to a cold leg LOCA exceeds the $1\text{E-}05$ goal for failure of shutdown DHR, it does not exceed the calculated probability for such failure for the actual plants which the NRC has studied, as discussed in SECY-88-260. It is in the range of $2\text{E-}04$ to $4\text{E-}04$ which was determined as the average for the six plants studied. On this basis, HLR might continue to be deferred and resolved as part of USI A-45. However, because HLR failure due to EQ status alone is in the range of the average

failure probability for all shutdown DHR events taken together for the other plants, SCE has concluded that the HLR EQ status should be upgraded during the Cycle 11 refueling outage to eliminate this potential source of failure.

References

- (1) SCE Letter to NRC, "Integration of Selected Backfit Modifications into the Systematic Evaluation Program," August 10, 1978
- (2) NRC Letter transmitting Franklin Research Center (FRC) Technical Evaluation Report (TER) on EQ of SONGS 1 Safety Related Electrical Equipment, April 3, 1981
- (3) SCE to NRC Letter, "Environmental Qualification of Electrical Equipment," November 3, 1984
- (4) SCE to NRC Letter, "Environmental Qualification of Electrical Equipment," November 19, 1984
- (5) NRC Letter, "Environmental Qualification of Electrical Equipment Important to Safety," March 11, 1985
- (6) SECY-88-260, Shutdown Decay Heat Removal Requirements (USI A-45), September 13, 1988