Docket No. 50-206

NOV 18 1979

LICENSEE: Southern California Edison Company (SCE)

FACILITY: San Onofre-1

SUMMARY OF MEETINGS HELD ON OCTOBER 24 AND 25, 1979

NRC and SCE representatives met in the NRC offices, Bethesda, Maryland on October 24, 1979 to review the SCE "Response to Lessons Learned from Three Mile Island" and on October 25, 1979 to review SCE changeover of San Onofre-1 to the new common switchyard for San Onofre Units 1, 2 and 3. Attachment 1 lists meeting attendees for the October 24, 1979 meeting. Attachment 2 lists the meeting attendees for the October 25, 1979 meeting.

October 24, 1979 Meeting on Responses to Three Mile Island Lessons Learned

By letter dated October 17, 1979 SCE presented responses to NRC requirements related to the Three Mile Island accident relative to San Onofre-1. The NRC requirements were specified in NRC letter dated September 13, 1979. The purpose of the meeting, requested by SCE, was to review selected items from the October 17, 1979 SCE response as listed in the topical meeting agenda prepared by SCE, attachment 3. SCE representatives noted that of the 33 NRC positions that must be satisfied by January 1, 1980 only three could not be met. These three were identified in the SCE October 17, 1979 report as:

Section 2.1.1	Backup nitrogen pneumatic supply
Section 2.1.3a	Power-operated relief valve and safety valve position indication
Section 2.1.4	Containment Isolation Provisions

SCE emphasized that extraordinary effort, attachment 4, including 30% overtime for engineers, was being expended to meet the NRC schedule for implementing the NRC recommendations resulting from the TMI accident. Nevertheless, they were informed that the NRC schedule must be met unless SCE can provide additional information in a supplemental report to justify by detailed engineering, procurement, and construction schedule reasonable delays.

CCP
MEMO4

OFFICE ▶						
SURNAME ▶						
DATE ▶					7912060170	

With respect to a proposal by SCE that six of the NRC recommended actions (see item 11 of attachment 3) be deferred to the Systematic Evaluation Program, the NRC position is that the schedule should not be delayed to coincide with completion of the systematic evaluation program.

October 25, 1979 Meeting on Offsite Power Sources

SCE representatives reviewed the adequacy of the new switchyard for San Onofre 1, 2 and 3 (attachment 5) when compared with applicable design criteria. Based on this information the NRC staff concluded that the common switchyard for San Onofre Units 1, 2 and 3 satisfies the requirements of all applicable design criteria and San Onofre Unit 1 may be interconnected to the new switchyard as planned during the refueling outage currently scheduled for March-April 1980.

Original signed by
James J. Shea, Project Manager
Operating Reactors Branch #2
Division of Operating Reactors

Enclosures:
1. 10/24/79 Attendance List
2. 10/25/79 Attendance List
3. Topical Meeting Agenda
4. Extraordinary Efforts
5. Adequacy of New Switchyard

cc w/enclosures:
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CONCUR IN CONNECTION OF UNIT 1 TO NEW SWITCHYARD

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SURNAME	JJShea:esp	ABurger	DLZiemann			
DATE	11/15/79	11/16/79	11/18/79			

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ENCLOSURE NO. 1

ATTENDANCE LIST

MEETING WITH SOUTHERN CALIFORNIA EDISON COMPANY

OCTOBER 24, 1979

SOUTHERN CALIFORNIA EDISON COMPANY

K. Baskin
R. Krieger
W. C. Moody
E. Gerloff
D. Nelson

NRC - STAFF

J. J. Shea
T. Telford
J. Olshinski
J. Kerrigan
P. O'Connor
J. F. Burdoin
M. Chiramal
D. Snaider
C. Nelson
D. L. Ziemann
E. V. Imbro
G. Holahan
D. F. Bessette
J. E. Rosenthal
J. N. Donohew

ENCLOSURE NO. 2

ATTENDANCE LIST

MEETING WITH SOUTHERN CALIFORNIA EDISON COMPANY

OCTOBER 25, 1979

SOUTHERN CALIFORNIA EDISON COMPANY

R. W. Krieger
R. Ornelas
W. C. Moody

NRC - STAFF

J. J. Shea
J. E. Knight
J. F. Burdoin

ENCLOSURE NO. 3

DISCUSSION ITEMS FOR NRC/SCE MEETING
SAN ONOFRE UNIT 1

LESSONS LEARNED TASK FORCE RECOMMENDATIONS
BETHESDA, MARYLAND
October 24, 1979

1. Section 2.1.1

   a) Qualification of Interfaces

   Motive and control power interfaces are qualified to the same degree as existing safety-related interfaces with the electrical buses.

   b) Cross-Training of Power-Operated Relief Valves and Associated Block Valves

   Since the current "train" alignment configuration in conjunction with the valve fail-safe positions provides for both single failure protection and redundancy, cross-training will not be made.

2. Section 2.1.3.a: Power-Operated Relief Valve and Safety Valve Position Indication

   Foxboro instrumentation has not yet been qualified to IEEE 323-1974, Trial-Use Guide for Qualifying Class I Electrical Equipment for Nuclear Power Generating Station; therefore, the 1971 edition of IEEE 323 will be utilized for qualification.

3. Section 2.1.3.b: Primary Coolant Saturation Meter

   A safety-related primary coolant saturation meter will not be utilized. In lieu of this criteria, a controls grade primary coolant saturation recorder will be installed in conjunction with the use of a saturation temperature/pressure curve which utilizes safety-related instrumentation independent from that used for the saturation recorder. In addition, the recorder will receive input from a pressurizer pressure transmitter and a hot leg RTD from any reactor coolant loops (rather than two from each reactor coolant loop) with switching capability to choose any one of the three hot leg loop temperature signals.

4. Section 2.1.5.a: Dedicated Penetrations for Purge Systems

   Preliminary results of Westinghouse evaluation on hydrogen generation following an accident indicates that upwards of thirty days is required to reach a combustible mixture (i.e., 4%). Therefore, efforts are currently proceeding on the basis that hydrogen control will be handled by manual containment purge direct to exhaust stack through dedicated

penetrations meeting redundancy and single failure requirements. Appropriate air cleanup systems would be provided based on calculated containment atmosphere activity levels at the time purge is required (i.e., thirty days).

5. Section 2.1.6.b: Leak Reduction Methods

The initial measurement of actual leakage rates will be performed during the March-April, 1980 refueling outage. The basis for the schedule is that the leak rate testing can only be performed during a shutdown.

6. Section 2.1.8.b: Noble Gas Effluent Monitors

A nonredundant, safety-related noble gas effluent monitor will be installed in the exhaust stack with the capability to monitor from normal condition (ALARA) concentrations to a maximum of 10^5 micro-curies/cc (Xe-133).

7. Section 2.2.1.b: Shift Technical Advisor

a) Commencing on January 1, 1980, the position of Shift Technical Advisor (STA) will be filled in the following manner:

i) During all off-normal hours (i.e., grave and swing shifts, weekends and holidays), a San Onofre Units 2 and 3 operations shift supervisor with previous experience at San Onofre Unit 1 will function as the STA. In addition, a Station Engineer with a bachelor's degree knowledgeable in the basic engineering and science subjects will be on-call and available at the station within one hour after reactor trips.

ii) During normal working hours, a Station Engineer with a bachelor's degree knowledgeable in the basic engineering and science subjects will function as the STA.

iii) Station Engineers functioning as STA's or providing on-call assistance will have specific training in station design and response.

iv) The STA's will report to the Station Supervising Engineer

b) Commencing on January 1, 1981, the position of STA will be filled in the following manner:

i) The STA will have a bachelor's degree in a scientific or engineering discipline or will have equivalent education and experience. The STA will have received specific training in the response and analysis of the station for transients and accidents and in station design and layout, including capabilities of instrumentation and controls in the control room.

ii) The STA will report to the Station Supervising Engineer

iii) Once San Onofre Units 2 and 3 become operational, the STA will be assigned to function at these units as well and will have specific training in the station design and response of the units.

8. Section 2.2.2.b: Onsite Technical Support Center

Efforts are currently proceeding on the basis that closed circuit television will be used to display and transmit station technical data to the Onsite Technical Support Center.

9. All equipment being installed will be designed to site specific seismic criteria; however, the equipment will not be qualified to operate concurrent with a seismic event.

10. The implementation schedules required by the NRC cannot be met. The following items will be discussed:

a) Engineering, procurement and construction schedular elements established to implement "Containment Isolation Provisions" as described in Section 2.1.4 will be reviewed as an example.

b) Extraordinary efforts which are being made to meet the established implementation schedules will be reviewed.

c) Critical assumptions made in preparing the established implementation schedules will be reviewed

d) The basis for not requiring a separate, interim shutdown prior to the March-April, 1980 refueling outage to complete the modifications identified in Section 2.1.1 (backup nitrogen pneumatic supply), Section 2.1.3a (power-operated relief valve and safety valve position indication) and Section 2.1.4 (containment isolation provisions) will be reviewed.

11. Modifications which will be deferred to the Systematic Evaluation Program are identified in Section 2.1.3.b (instrumentation to detect inadequate core cooling), Section 2.1.5.a (dedicated penetrations for purge system), Section 2.1.6.b (plant shielding for personnel/equipment protection), Section 2.1.7.a and b (automation of auxiliary feedwater system), Section 2.1.8.a (plant shielding/facilities to obtain samples and perform radiological spectrum and chemical sample analyses onsite), Section 2.1.8.b (plant shielding/facilities to perform laboratory analyses of iodine gaseous effluents onsite) and Section 3.2 (reactor coolant system high point vents).

ENCLOSURE NO. 4

SOUTHERN CALIFORNIA EDISON COMPANY
TMI RETROFIT PROJECT FOR
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1
EXTRAORDINARY EFFORTS

- Engineering and QA work with supplier to define "parts essential to function" and put adequate QA/QC on manufacture and receiving inspection - Reduced QA prequalification of supplier -

- Multi-Level Procurement of Safety-Related Equipment/Services - Reduced process for supplier prequalification -

- Combined engineering, construction, station operators and QC inspection review at one time together during jobwalk. - Reduced sign off time during review/comment to approval from 3 months to 2 months - Handcarried all design disclosure information in lieu of Document Management - Further reduction 2 months to 1 month -

- On-Site Review Committee has early review of logic and P&IDs prior to actual design change approval - Reduce the amount of time spent with operations, home office engineers -

- Introduced "Mini-Spec" process allowing SCE to approve suppliers manufacturing spec. for application at SONGS 1. - Reduce spec. processing time from up to 4 months to about 1 month for complex equipment -

- Engineering/design for Design Criteria Manual drawings and equipment purchasing proceeding in parallel with construction planning. - Cut engineering time by factor of number of disciplines involved -

- Instituted the High Confidence Level (HCL) system on review and comment drawing issues to allow other disciplines and construction planning to proceed with good HCL information. In non-HCL, these items are identified to management for a decision.- Result increased management control of risks -

- Developing a standard raceway support design to allow construction more flexibility in the field. - Reduced number of field changes and NCRs issued by QA -

- Procured large quantities of Safety-Related power and control cable in September expressly for potential TMI retrofit work.

- Making extensive use of SONGS 2&3 Safety-Related equipment inventory for use at Unit 1.

- Utilizing SONGS 2&3 manufactures to obtain manufacturing slot to reduce procurement lead times by "piggy-backing" specifications.

- Functional elementary diagrams will be issued by Controls instead of block and logic diagrams to facilitate Electrical issuing elementaries. - Reduced time for Electrical to develop elementary diagrams - 4 weeks.

EJG:ira 10/23/79

ENCLOSURE NO. 5

SUMMARY OF SCE REMARKS AT 10/25/79 MEETING REGARDING OFFSITE POWER SOURCES SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1

In connection with the construction of Units 2 and 3 at the San Onofre site, a new switchyard for Units 1, 2 and 3 has been constructed. The San Onofre Unit 1 onsite electrical distribution system will be interconnected with the new switchyard during the next refueling outage for San Onofre Unit 1 which is currently scheduled for March-April 1980. The station design change represented by the planned cutover of Unit 1 to the new switchyard has been reviewed and approved by the Company's Onsite Review Committee in accordance with 10 CFR 50.59. The design of the switchyard has been presented in the San Onofre Units 2 and 3 FSAR.

During the week of August 20, 1979, NRC Region V personnel conducted a site visit during which it was noted that the offsite power sources to the three units as planned in the new switchyard were supported by common deadend structures in each case, a situation which they believed was not in agreement with the requirements of General Design Criterion 17 (GDC-17) of 10 CFR 50. In light of this concern, a rereview of applicable separation criteria for the design of switchyards for nuclear generating stations and the compliance of the San Onofre Unit 1 design thereto was conducted and is summarized below:

I. APPLICABLE DESIGN CRITERIA

The following applicable codes specifically relating to the separation requirements of power sources were identified:

A. Criterion 17, Appendix A, 10CFR50, "Electric Power Systems".

1. Requires that both an onsite and an offsite electric power system be provided to permit functioning of safety related systems.

2. Requires that the electric power from the transmission network to the onsite electrical distributior system is to be supplied by two physically independent circuits. The two circuits are to be designed and located so as to minimize to the extent practical, the likelihood of their simultaneous failure.

3. A switchyard common to both circuits is acceptable.

B. IEEE308, "IEEE Standard Criteria for Class IE Power Systems for Nuclear Power Stations".

1. Requires that each redundant Class IE load group (4kv buses) shall have access to both a preferred and a standby power supply.

2. The preferred power supply shall consist on one or more circuits from the transmission network, or equivalent source of energy to the Class IE distribution system input terminals.

3. A minimum of one circuit from the transmission network normally shall be available during operation. If only one circuit from the transmission network is normally available, the design shall include a provision for alternate access to the transmission network. The circuit that is normally available shall be designed to be available within an acceptable time following a loss of coolant accident.

C. Regulatory Guide 1.32, "Criteria for Safety-Related Electric Power Systems".

1. Accepts the criteria of IEEE308.

2. Defines the statement, "within an acceptable time" of B.3 above to mean within a few seconds, reflecting the requirement stated in GDC-17.

D. Regulatory Guide 1.93, "Availability of Electric Power Sources".

1. This guide describes operating limit requirements rather than design requirements.

2. The Limiting Conditions for Operation (LCO) are met when all the electric power sources required by GDC-17 are available.

II. COMPLIANCE WITH APPLICABLE CRITERIA

The switchyard has been designed to meet all of the previously mentioned criteria with regard to the electrical and physical separation of the power sources to the station. The manner in which compliance is accomplished for the San Onofre Unit 1 switchyard is discussed below:

The requirement of both an offsite and an onsite electrical system identified in GDC-17 is met at Unit 1 by the existence of the switchyard power sources and the diesel generators, both systems with sufficient capacity and redundancy to assure that "(1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and, (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents".

The requirement of GDC-17 for two independent circuits is met at the Unit 1 switchyard since the seven transmission lines from the electrical grids of SCE and SDG&E are routed independently (both structurally and electrically) to the SONGS switchyard. The switchyard is designed in a double bus arrangement so that on each side of the breakers, which isolate the SCE side from the SDG&E side, the required loads for each unit can be supplied from two separate buses. Since a switchyard common to both power circuits is acceptable, the routing of the two sets of lines from the switchyard, to the Unit 1 4kv buses, is such that they share a common dead-end structure, however, due to the breaker isolation scheme of the switchyard as discussed above, the two circuits are completely independent electrically.

The other design criteria of Section I are all met by the design of the SONGS switchyard since the 4kv buses have access to both the offsite and onsite power supplies, there exists more than one electrical circuit from the transmission network, the normally available offsite source is available immediately following a LOCA, and the existing technical specifications require that a second circuit be available.

As discussed above, GDC-17 specifies that the switchyard be designed to "minimize to the extent practical the likelihood"

of the simultaneous failure of both power circuits "under operating and postulated accident and environmental conditions". As these requirements apply to the dead-end structures under consideration, a discussion of the design of the structure for these conditions follows:

A. Operating Conditions

Under normal operating conditions the applicable loads on the structure are the static loading due to the weight of the structure, conductor and insulator and a wind load due to a 5 mph wind speed.

B. Environmental Conditions

The structure is additionally designed for a maximum wind speed of 80 mph and is coated with a corrosion inhibiting agent.

C. Accident Conditions

For seismic considerations, the structures were designed for a DBE of 0.50g and a OBE of 0.25g.

III. CONCLUSION

A. The design of the San Onofre switchyard complys with all applicable criteria regarding physical and electrical separation of power sources.

B. The design of the dead-end structure, as part of the common switchyard conforms with GDC-17.

C. The switchyard is designed for appropriately conservative operating, environmental and accident conditions.

D. Complete loss of offsite power results in the actuation of the diesel generators as the source of onsite electric power for the station.

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