

Southern California Edison Company

23 PARKER STREET IRVINE, CALIFORNIA 92718

January 9, 1990

F. R. NANDY MANAGER OF NUCLEAR LICENSING TELEPHONE (714) 587-5400

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

Gentlemen:

Subject: Docket No. 50-206 Response to Request for Additional Information on Conformance to Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident" San Onofre Nuclear Generating Station Unit 1

The purpose of this letter is to provide a response to the NRC'S request for additional information regarding Regulatory Guide 1.97 conformance for SONGS 1. SCE submitted the results of our Regulatory Guide 1.97 conformance review and provided justifications for items of deviation in letters dated December 16, 1985 and May 29, 1987. In their review of our submittals, the NRC developed a set of questions which were sent to us by letter dated October 14, 1988.

The original submittal on this subject dated December 16, 1985 contained our contractor's recommendations for plant modifications to meet the intent of the Regulatory Guide. Their recommendations addressed environmental qualification, redundancy and recording capability of instruments in the control room, and physical separation of power supplies and cables. Additional information concerning the adequacy of existing instrumentation was provided in our submittal dated May 29, 1987. As a result of their review of this information, the NRC requested additional information on several of the remaining contractor recommendations in order to complete their review. For the issues which deal with physical separation of power supplies and cables, we have previously committed, by letter dated June 3, 1989, to integrate these with the resolution of related SEP topic VI-7.C.2, "Failure Mode Analysis." As part of the resolution of that SEP topic, SCE is performing a single failure reanalysis. Following completion of that analysis, all open items concerning separation of cables and power supplies from both that issue and

9001160008 900109 PDR ADOCK 05000206

A003

Document Control Desk

- 2 -

January 9, 1990

the Regulatory Guide 1.97 review will be evaluated together. This integrated evaluation is scheduled to be completed by October 30, 1990.

The enclosure provides a response to each of the NRC questions. The responses are grouped according to the need to resolve physical separation issues as indicated by the subheadings of the enclosure.

As a result of our review of the information developed to respond to the NRC's questions, we have determined that a redundant main steam pressure indicator should be installed in the control room. Further information on this modification is provided in our response to NRC question number 7. This modification will be added to those which will be required as part of the Safety Parameter Display System modifications which are scheduled for Cycle 12 implementation. It should also be noted that additional evaluations related to Regulatory Guide 1.97 but not previously identified in correspondence on this subject with the NRC include upgrading the hot leg recirculation system. Modification to this system are scheduled for the Cycle 11 refueling outage and are further discussed in response to NRC question number 6 in the enclosure.

If you have any questions regarding this matter, please contact me.

Very truly yours,

ARNaly

enclosure

cc: J. B. Martin, Regional Administrator, NRC Region V

C. W. Caldwell, NRC Senior Resident Inspector, San Onofre Units 1, 2, and 3

Enclosure

RESPONSES TO REQUEST FOR ADDITIONAL INFORMATION CONFORMANCE TO REGULATORY GUIDE 1.97, REVISION 2

<u>Questions Containing Issues Being Resolved in Conjunction with SEP</u> <u>Topic VI-7.C.2, "Failure Mode Analysis"</u>

The following questions all contain issues being resolved in conjunction with resolution of SEP Topic VI-7.C.2 and are addressed with one response at the end of the questions.

<u>Question 1:</u>

In Reference (3), the licensee's contractor recommended that the neutron instrumentation system cabling be upgraded to provide adequate separation. Reference (1) indicated that the neutron instrumentation system would be replaced with a new system that meets the environmental qualification requirements of 10 CFR 50.49 and the Category 1 criteria of RG 1.97. However, it remains unclear whether the existing cabling will be used or upgraded as part of the replacement system.

Question 2:

In Reference (3), the licensee's contractor recommended that the reactor coolant system (RCS) cold leg temperature power supply be upgraded to provide adequate separation. The licensee should address the upgrading of the reactor coolant system cold leg temperature power supply.

Question 3:

In Reference (3), the licensee's contractor recommended that the reactor coolant pressure power supply be upgraded to provide adequate separation. The licensee should address the upgrading of the reactor coolant system pressure power supply.

Question 5:

In Reference (3), the licensee's contractor recommended that the auxiliary feedwater (AFW) tank level power supply be upgraded to provide adequate separation. The licensee should address the upgrading of the auxiliary feedwater tank level power supply.

Question 6:

In Reference (3), the licensee's contractor recommended that the recirculation flow instrumentation be upgraded to provide redundant, environmentally qualified instrumentation. The licensee should address the upgrading of the recirculation flow instrumentation.

Question 9:

In Reference (3), the licensee's contractor recommended that the pressurizer level instrumentation power supply be upgraded to provide adequate separation. The licensee should address the upgrading of the pressurizer level instrumentation power supply.

Response to Questions with Cable and/or Power Supply Separation Issues

Questions 1, 2, 3, 5, 6, and 9 all contain cable and/or power supply separation issues. As indicated in SCE's June 3, 1989 letter to the NRC, these issues will be addressed together with those of SEP Topic VI-7.C.2, "Failure Mode Analysis." Questions 1 and 6 also contain other issues which are addressed elsewhere in this enclosure.

Our approach to resolution of power supply and/or cable separation issues includes re-performing the original single failure analysis of the SEP Topic to use modern methods and address other potential shortcomings in that work. Since the single failure reanalysis may reveal additional cases where separation may be an issue (e.g., a newly identified single failure issue which may include separation as part of its resolution), all separation issues will be addressed at one time to avoid duplication of effort. This work is scheduled to be completed by October 31, 1990 (six months after completion of the single failure reanalysis). The questions have been repeated here for easy reference.

<u>Questions Containing Issues not Being Resolved in Conjunction With Resolution</u> of SEP Topic VI-7.C.2

- 3 -

Following are responses to questions which contain issues not being resolved in conjunction with SEP Topic VI-7.C.2. Questions 1 and 6 each contain two issues, one of which is not impacted by the ongoing SEP analysis and the other which is. Therefore, these questions appear in both sections of this enclosure.

Question 1:

In Reference (3), the licensee's contractor recommended that the neutron instrumentation system cabling be upgraded to provide adequate separation. Reference (1) indicated that the neutron instrumentation system would be replaced with a new system that meets the environmental qualification requirements of 10 CFR 50.49 and the Category 1 criteria of RG 1.97. However, it remains unclear whether the existing cabling will be used or upgraded as part of the replacement system.

Response:

The neutron instrumentation system (NIS) and most associated cables were replaced during the 1988 mid-cycle outage with a new Westinghouse system. All cables which were replaced as part of this project were upgraded to meet the requirements of 10 CFR 50.49. However, in accordance with the precedence established by Amendment No. 38, "Addition of Standby Power and ECCS Modifications," dated February 7, 1975, only cables up to the interface point with existing plant equipment were replaced. For those places in which new cable was not installed, the resolution being followed to address separation of cable and power supply requirements will apply to this item (see separate response to question one for these issues on page 2 of this enclosure).

Question 4:

In Reference (3), the licensee's contractor recommended that the steam generator wide range level transmitters be environmentally qualified to be used as a redundant channel for auxiliary feedwater flow. The licensee should address the environmental qualification of the steam generator wide range level transmitters.

Response:

Three steam generator wide range level transmitters, LT-465A, B, and C, were installed during the Cycle 10 outage and are environmentally qualified. These steam generator wide range level transmitters provide functional backup indication of auxiliary feedwater flow.

Question 6:

In Reference (3), the licensee's contractor recommended that the recirculation flow instrumentation be upgraded to provide redundant, environmentally qualified instrumentation. The licensee should address the upgrading of the recirculation flow instrumentation.

Response:

Redundancy requirements for flow instrumentation on cold leg recirculation is under evaluation as a part of the ECCS single failure reanalysis. Existing flow instruments FT-3114A, FT-2114B, and FT-2114C have been environmentally qualified and provide flow measurement for cold leg recirculation. The need for additional instrumentation will be confirmed or negated by the single failure reanalysis and a final resolution provided at that time. In addition, since SCE committed by letter dated October 2, 1989 to upgrade the environmental qualification status of the hot leg recirculation system, this system will also have regulatory guide 1.97 requirements evaluated as part of the single failure reanalysis and the power supply and cable separation issues (see explanation of SCE's resolution of this category of issues elsewhere in this enclosure).

Question 7:

In Reference (3), the licensee's contractor recommended that the main steam pressure instrumentation be upgraded to provide environmental qualification with adequate range and uninterruptible power supply. The licensee should address the upgrading of the main steam pressure instrumentation.

Response:

The main steam pressure transmitter, PT-459, and associated cables were environmentally qualified during the 1988 mid-cycle outage as a part of the Reactor Protection System (RPS) steam/feedwater flow mismatch trip modifications. In addition, the main steam pressure instrument PT-459 loop is provided with an uninterruptible power supply from Vital Bus 4, which is powered from Train A Inverter No. 4 on DC Bus 1. Therefore, the environmental qualification and uninterruptible power supply issues for the main steam pressure instrument PT-459 are considered resolved.

The range of PT- 459 is also considered adequate. PT-459 provides steam density compensation for the steam/feedwater flow mismatch trip and feedwater control system. The existing range of the main steam pressure is 1000 psia; however, RG 1.97 requires the maximum main steam pressure indication to be 20% above the lowest safety valve setting. The lowest safety valve setpoint is 985 psig. The peak secondary pressure, however, is limited to approximately 1000 psia for the design basis loss of load event as analyzed in UFSAR Section 15.3.1. In addition, any modifications to increase the range from 1000 psia to 1182 psia would increase the associated uncertainty and adversely affect the RPS mismatch trip and the feedwater control system. We consider that a modification to increase the range of PT-459 is unnecessary and,



furthermore, such a modification could have a negative safety impact; therefore, the existing control room indication range of zero to 1000 psia is adequate and the range of the steam pressure instrument is considered resolved.

- 5 -

As part of our review of this response, the need for a redundant main steam pressure indicator has been confirmed. A modification to provide a redundant control room indicator from a qualified instrument and powered from an uninterruptible power supply will be included in the SPDS modifications, scheduled for the Cycle 12 refueling outage.

Question 8:

.

5 ¥.

In Reference (3), the licensee's contractor recommended that the containment isolation valve position indication be upgraded to qualified status. The licensee should address the upgrading of the containment isolation valve position indication.

Response:

In Reference (3), a total of eight containment isolation valve position indications were recommended for environmental qualification. We have environmentally qualified six containment isolation valve position indications associated with valves CV-951, CV-953, CV-955, CV-956, CV-957, and CV-962. Two containment isolation valve position indications associated with CV-949 and CV-992, recommended for upgrade in Reference (3), are located in a mild environment and do not require environmental qualification. The environmental qualification of containment isolation valve position indicators is, therefore, considered resolved.

<u>References</u>

- Letter from M. O. Medford, (SCE) to Document Control Desk (NRC), dated May 29, 1987, Regulatory Guide 1.97 Review, San Onofre Nuclear Generating Station, Unit 1
- (2) Letter from R. F. Dudley, (NRC) to K. P. Baskin (SCE), dated December 22, 1985, Transmittal of Draft Technical Evaluation Report (TER) Regarding Regulatory Guide 1.97 Conformance
- (3) Letter from M. O. Medford, (SCE) to G. E. Lear (NRC), dated December 16, 1985, Regulatory Guide 1.97 Review, San Onofre Nuclear Generating Station, Unit 1