SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL™ Company

J. L. Rainsberry
Manager, Plant Licensing

July 31, 1997

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

Gentlemen:

Subject: **Docket Nos. 50-361 and 50-362**
Information in Support of Design Bases
San Onofre Nuclear Generating Station
Units 2 and 3

Reference: February 12, 1997 letter from Harold B. Ray (Edison) to Document Control Desk (NRC), Subject: Request for Information Pursuant to 10 CFR 50.54(f) Regarding Adequacy and Availability of Design Bases Information

This letter is a followup to Southern California Edison's (Edison's) February 12, 1997 letter (Reference) regarding the adequacy and availability of design bases information. In that letter Edison committed to provide the NRC with information related to the Safety System Functional Assessment (SSFA) and the Setpoint Calculation Program. This letter also updates Edison's status of completing issues related to the Design Basis Document Program.

In the February 12, 1997 letter Edison committed to perform SSFAs of the Class 1E 120V AC System and the Control Room Emergency Air Cleanup System (CREACUS). As indicated in the letter, Edison further committed to provide detailed assessment plans for the SSFAs. The letter also described the third and fourth phases of the Setpoint Calculation Program which remain to be completed. Edison committed to provide a detailed program description of these final two phases. Therefore, provided as Enclosures 1 and 2 are the plans for the SSFA and a program description of the Setpoint Calculation Program, which includes discussion of the third and fourth phases.

Our February 22, 1997 and April 22, 1996 letters stated Edison's commitment to perform a comprehensive review of the Updated Final Safety Analysis Report (UFSAR) to support the update of the UFSAR to be submitted 6 months after the Unit 3 Cycle 9 refueling outage (Revision 13). To date over 40,000 manhours

A074 1/1

San Onofre Nuclear Generating Station
P. O. Box 128
San Clemente, CA 92674-0128
714-368-7420

9708050280 970731
PDR ADOCK 05000361
P PDR

have been expended in support of this review effort and the project is on track to support the Revision 13 update. However, in order to incorporate the results of the SSFAs and Setpoint Calculation Program discussed above, to reflect the additional Design Basis Documents (DBDs) being prepared, to allow for additional quality verification of the UFSAR effort, and to research contractor information which was not readily verifiable, Edison will be extending the UFSAR project through October of 1998. Therefore, following completion of the UFSAR project a Revision 14 update incorporating additional results of the project will be submitted.

The UFSAR project, DBDS, SSFAs, and Setpoint Calculation program are scheduled to be completed by October 1998. This will ensure the efforts of these programs will be within the time frame of the NRC's policy statement published in the Federal Register on October 18, 1996. That policy modified the NRC's Enforcement Policy to refrain from issuing civil penalties and citations for a two year period where a licensee undertakes voluntary initiative to identify and correct UFSAR noncompliances.

The February 12, 1997 letter also discussed Edison's Design Basis Document (DBD) Program. As part of that effort, issues (Open Item Reports (OIRs)) were identified that still required resolution. Edison committed to complete resolution of these issues by July 1997. There were approximately 176 OIRs that required resolution. Edison has completed the evaluations of 175 OIRs. The remaining OIR will be completed by the end of August 1997.

If you have any questions regarding the enclosures, please let me know.

Sincerely,

Enclosures

cc: E. W. Merschoff, Regional Administrator, NRC Region IV
K. E. Perkins, Jr., Director, Walnut Creek Field Office, NRC Region IV
J. A. Sloan, NRC Senior Resident Inspector, San Onofre Units 2 & 3
M. B. Fields, NRC Project Manager, San Onofre Units 2 and 3

Enclosure 1

Safety System Functional Assessment Plan

Enclosure 1

SAFETY SYSTEM FUNCTIONAL ASSESSMENT PLAN

PURPOSE:

The primary objective of the Safety System Functional Assessment (SSFA) is to assess the operational performance capability of selected safety systems through an in-depth, multi-disciplinary engineering review to verify that the selected systems are capable of performing their intended safety functions. Safety significant findings are pursued across the system boundaries to determine applicability to other systems.

The second objective of the SSFA is to determine the program-related root cause for identified performance deficiencies and analyze the implications of these deficiencies on the overall implementation of the quality assurance program at San Onofre.

SCOPE:

Two SSFAs will be conducted by October 1998 related to the following San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 systems:

- Control Room Emergency Air Cleanup System
- Class 1E 120V AC System

ASSESSMENT TEAM COMPOSITION:

The assessment team will consist of personnel with experience in design, operations, maintenance, testing, and quality assurance. The Nuclear Oversight Division (NOD) will provide the team leader. Personnel from NOD and other organizations will complete the assessment team.

<u>ASSESSMENT SCHEDULE:</u> The assessment will normally be performed over a two month period. The breakdown of assessment activities is as follows:

- Planning and Training - 2 weeks
- Assessment Reviews - 4 weeks
- Report Preparation - 2 weeks

The assessment shall be conducted in accordance with procedure S0123-XII-2.25, "Nuclear Oversight Division (NOD) Assessments."The NOD team leader will be responsible for the overall planning, training, performance, and reporting of the assessment. Periodic team meetings will be held to discuss assessment progress and to facilitate communication between team members. In addition, management briefings will be held periodically during the assessment and at the conclusion of the assessment.

ASSESSMENT PLAN:

The areas to be reviewed during the SSFA are outlined in the following sections. These areas are based on NRC Inspection Manual Inspection Procedure (IP) 93801 "Safety System Functional Inspection" dated 7-15-96. The guidance contained in IP 93801 shall also be used by the team members in planning, training, and performance of the assessment reviews.

A. ENGINEERING DESIGN AND CONFIGURATION CONTROL

1. Review the design bases and licensing bases such as calculations and analyses for the selected system and determine the functional requirements for the system and selected active components during accident and abnormal conditions. This review should include verification of the appropriateness of the design assumptions, boundary conditions, and models. This may include independent calculations by the assessment team. The review should determine if (1) the design bases is in accordance with the San Onofre Nuclear Generating Station (SONGS) licensing commitments and NRC regulatory requirements, (2) the design bases, analyses, and associated design output documents, such as facility drawings and procurement specifications, are correct, and (3) if the installed systems and components are tested to verify that the design bases have been met.

2. Review the configuration of the selected system as installed in the plant, and determine if the drawings which reflect the as-built design and installation are consistent with the current design and licensing documents, regulatory requirements, and licensing commitments.

3. Determine if the as-built and modified system is capable of functioning as specified by the current design and licensing documents, regulatory requirements, and licensing commitments.

4. Determine if the system operation is consistent with the design and licensing documents. Determine the need for further review and operational evaluation of discrepancies.

5. Evaluate the drawing control program, the control and use of design and licensing input information, and the adequacy of design calculations from the perspective of modifications made to the selected safety system.

6. Review all modifications made to the original system that could have potentially changed the design bases. Determine if the system meets the design bases and licensing bases in the as-modified configuration.

7. Determine if system modifications implemented since initial licensing have introduced any unreviewed safety questions.

8. Review the modification packages for the selected safety system to ensure that all changes to the support elements have been made (pursuant to ANSI N45.2.11), including maintenance requirements and procedures, software, operating procedures, training documentation and training programs, periodic testing, and procurement documentation and specifications. Determine the need for further review and evaluation of discrepancies.

9. Evaluate the interface between engineering and technical support and plant operations.

10. Review any previous assessments and technical audits performed by Edison related to the selected safety system to determine issues raised, the adequacy of the technical resolution, and the effectiveness of any corrective actions taken.

11. Review the results of the plant specific Individual Plant Examination (IPE) relative to the selected safety system, and determine the adequacy of actions taken to respond to the IPE recommendations.

B. OPERATIONS

1. Identify the key portions of the system and components that the operators interface with in the normal day-to-day and emergency operations activities.

2. Review the technical adequacy and accuracy of alarm response procedures and operating procedures for normal, abnormal, and emergency system operations.

3. Review the operator training for the selected system, focusing on the technical completeness and accuracy of the training manual and lesson plans. Ensure that the lesson plans reflect the system modifications and the licensed operators have been trained on these modifications.

4. Walk-through the system operating procedures and the higher tier system drawings (P&IDs, One-Lines, Elementary Diagrams, etc.) with the operators. Verify that the procedures can be performed using the main control panel and the alternate shutdown panel and that components and equipment are accessible for normal and emergency operation. If any special equipment is required to perform these procedures, determine if the equipment is available and in good working order. Verify that the knowledge level of the operators is adequate concerning equipment location and operation.

5. Conduct interviews with the operators to determine how the system is operated. Determine if system operation is consistent with the licensing bases.

6. Verify the local operation of equipment. Determine whether the indication available to operate the equipment is in accordance with applicable operating procedures and instructions. Verify that the environmental conditions assumed under accident conditions are adequate for remote operation of equipment, such as expected room temperature, emergency lighting, etc.

7. Verify that support systems and procedures are adequate to support the selected safety system during the event sequences that it is designed to initiate.

C. MAINTENANCE

1. Identify the key portions of the system and components that require periodic maintenance to assure proper operation.

2. Conduct an in-depth system walkdown to understand the system layout and current status.

3. Witness any maintenance performed on the selected system during the assessment reviews.

4. Review maintenance procedures for technical adequacy. Determine if the procedures are sufficient to perform the maintenance task and provide for identification and evaluation of equipment and work deficiencies. Check the procedure content against the vendor requirements to verify that the procedure satisfies the vendor requirements, as determined applicable to SONGS activities, for maintaining the equipment in proper working order. Verify that important manuals are complete and up-to-date.

5. Review the maintenance program for the selected system to determine if the preventative maintenance (PM) requirements are adequate and comprehensive.

6. Determine if the system components are being adequately maintained to ensure their operability under all accident conditions.

7. Review applicable vendor manuals, generic communications (i.e., Bulletins, Information Notices, Generic Letters, special studies, etc.) and verify that these items have been adequately included in the maintenance program.

8. Review the component history files for the selected components for the past two years (or longer period if necessary) to identify the extent of maintenance required (preventative versus corrective), recurring equipment problems, and trends. Select several maintenance activities and verify each for technical adequacy, performance of appropriate post-maintenance testing, and satisfactory demonstration of equipment operability.

9. Conduct detailed interviews with maintenance personnel to determine what maintenance and modifications have been performed. Determine if the maintenance and modifications are consistent with the licensing bases.

10. Determine if maintenance personnel receive adequate training pertaining to the selected safety system and if the degree of training provided is consistent with the amount of technical detail included in the procedures.

D. SURVEILLANCE AND TESTING

1. Identify the key portions of the system and components that require periodic surveillance and testing to assure proper operation.

2. Review and evaluate the technical adequacy and accuracy of the Technical Specification surveillance procedures and in-service test procedures performed in the past two years for the selected system. Attention should be focused on the specific components selected for detailed review.

3. Verify that the system has been tested in accordance with the accident analysis. Determine if the testing adequately ensures that the system will operate as designed under postulated accident conditions. Verify that the surveillance test procedure acceptance criteria are adequate to demonstrate continued operability.

4. Determine if surveillance test procedures comprehensively address system responses addressed in the licensing bases.

5. Evaluate the support systems and plant modifications selected for review by the assessment team to ensure that system capability as demonstrated by preoperational testing is consistent with the licensing bases.

6. Review the component history files, looking for indication of adverse trends or recurrent test failures.

7. Review the in-service test records for pumps and valves in the selected safety system, emphasizing the technical adequacy and accuracy of the data. Attention should be focused on the specific components selected for detailed review.

8. Conduct interviews with instrumentation and control technicians, discussing in detail such items as how specific instruments are tested, how valve stroke time testing is performed, and how and where temporary test equipment is installed.

9. Determine if engineering and technical support personnel contribute to surveillance test procedures and if they review test results.

10. Witness any post-maintenance, surveillance, and in-service tests performed on the selected system during the assessment reviews.

E. QUALITY ASSURANCE AND CORRECTIVE ACTIONS

1. Review the Onsite Review Committee meeting minutes and Nuclear Safety Group monthly reports for the past six months pertaining to the selected system. Identify any discrepancies and unusual operability determinations for use in the assessment team's reviews of operations and design engineering.

2. Review the Action Request (AR) system for open items pertaining to the selected safety system.

3. Conduct technical interviews with key NOD personnel to determine their understanding of the system licensing bases and level of involvement in field activities.

4. Review the operational history of the selected system, including Licensee Event Reports (LERs), Nuclear Plant Reliability Data System (NPRDS) reports, 10 CFR 50.72 reports, NRC enforcement actions, Nonconformance Reports, and Event Reports, with an emphasis on

adequacy of root cause evaluations. Review a sample of maintenance orders, which are being worked or are ready to be worked, related to the selected system to determine consistency with the licensing bases.

5. Review the status of corrective actions for the findings of applicable SSFIs and technical audits of the selected system, where available.

6. Negative findings by the assessment team related to the selected system will be further reviewed for other systems to determine if the findings are indicative of a programmatic problem. Should a programmatic concern be identified, the process that controls the program shall be evaluated to determine the apparent root cause.

7. Compare the results of the assessment team's reviews for the selected system with the results of applicable quality verification activities (i.e., audits, assessments, investigations, and reviews) in the same areas (i.e., operations, maintenance, surveillance and testing, engineering design, design control, etc.). In cases where findings exist, determine why they have not been corrected. In cases where the team found conditions which were missed by the normal quality verification activities, determine why these activities were not capable of finding these issues.

Enclosure 2

Setpoint Calculation Program

Program Description

Enclosure 2

SONGS
SETPOINT TOTAL LOOP UNCERTAINTY CALCULATION
PROGRAM DESCRIPTION

PURPOSE:

Edison has various historical and current programs in place to ensure that the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 design bases are sufficiently understood and documented and the plant is operated within its design bases. These programs and processes are changed from time to time to incorporate improvements and/or changes to work organization/processes. All such changes are made in accordance with applicable regulations and licensing requirements.

Edison has completed and planned a number of rigorous engineering and assessment efforts which assure the adequacy and availability of design bases information. In 1994 Edison completed its Design Bases Documentation (DBD) Program that started in 1989. Other efforts/programs which have been completed concerned Motor Operated Valves (MOV) and In-Service Testing (IST) which responded to Generic Letters 89-10 and 89-04. In 1990 Edison initiated the Setpoint Calculation Program, and phases 1 and 2 have been completed. The following describes the current setpoint and total loop uncertainty (TLU) calculation program at SONGS, including the instrument uncertainty calculations required to complete the final phases described in Edison's February 12, 1997 letter to the NRC, Subject: Request for Information Pursuant to 10 CFR 50.54(f) Regarding Adequacy and Availability of Design Bases Information, San Onofre Nuclear Generating Station (SONGS) Units 2 and 3.

BACKGROUND:

The industry and NRC guidelines for instrument setpoint calculations were issued after the Construction Permit for SONGS Units 2 and 3 was issued. Since no licensing commitments for instrument setpoint calculations were made by Edison in this time frame, setpoint calculations were performed in limited cases, by themselves, or included in mechanical and nuclear discipline calculations. In most cases, instrument error allowances were addressed in calculations, but not in the same detail or format recommended in the latest industry standards. Combustion Engineering, the Nuclear Steam Supply System (NSSS) vendor, had issued and maintained instrument setpoint calculations for the Plant Protection System (PPS) and only selected other setpoints. In 1987, Edison commenced a review of instrument setpoint calculation documentation.

In November, 1989, the NRC concluded an Electrical Distribution Safety System Functional Inspection (EDSSFI) relative to Units 2 and 3. In this inspection, the NRC noted that there was an inadequate transfer of design basis documentation to the determination of instrument setpoints, resulting in non-conservative settings. The low level alarm setpoints for the Diesel

Generator Day Tank and the Fuel Oil Storage Tank were cited as examples. Subsequently, setpoint calculations were performed to correct the deficiencies.

In response to the SSFI findings, Edison issued a letter to the NRC on April 24, 1990, committing to the implementation of a comprehensive program to reconstitute design calculations for instrument setpoints at SONGS Units 2 and 3. The letter stated that this program is to include for a selected set of instruments: (1) performing loop accuracy calculations, (2) reviewing calibration techniques and tolerances, (3) reviewing setpoint values to establish consistency with the design bases, and (4) resolution of any inconsistencies identified.

PROGRAM IMPLEMENTATION

Phases

The Setpoint program covers four major areas: safety related instrument setpoints, values in Emergency Operating Instructions (EOIs), Technical Specification instrument setpoints, and Technical Specification surveillance test acceptance criteria. Setpoint and Total Loop Uncertainty (TLU) calculations are performed in accordance with Edison's Design Standard JS-123-103C, Instrument Setpoint/Loop Accuracy Methodology.

The first phase of this program evaluated safety related instrument setpoints and associated surveillance test requirements (with the exception of those related to a not yet installed upgrade of the radiation monitor system). As part of this phase, a number of areas were addressed. Edison generated total loop uncertainty calculations. Setpoint values were reviewed to establish consistency with the design basis. Instrument loop calibration techniques and tolerances were reviewed against associated surveillance test requirements.

The second phase of the program evaluated instrument uncertainties for those values in EOIs and Remote Shutdown Procedures used to support substantive operator decisions. Edison generated instrument uncertainty calculations for these parameters. Post Accident Monitoring Instrumentation and Remote Shutdown Instrumentation covered by the Technical Specifications were included in this phase of the program.

The third phase of the program focuses on Technical Specification Chapter 3 Surveillance Requirements instruments whose values represent settings that function to mitigate accidents, and values for parameters which represent limiting initial conditions assumed

for postulated accident or abnormal operational occurrences.

The fourth phase of the program addresses instrument uncertainties where the Technical Specifications Chapter 3 Surveillance Requirements do not provide specific surveillance test acceptance criteria.

Program Status

The Setpoint Calculation Program, to date, has generated approximately 185 calculations and has evaluated the majority of safety significant instrumentation covered by the Technical Specifications. There has been no case where an instrument was determined to be inoperable as a result of a calculation.

Edison completed the first phase of the program in 1993. The second phase of the program was completed in 1994. Approximately 40% of the phase three calculations are complete.

The fourth phase of the program has recently been initiated. A review is in progress of all the Technical Specification Chapter 3 Surveillance Requirements and each Surveillance procedure to determine if a loop uncertainty calculation is required. Calculations required for all four phases will be completed by October 1998. Completion of the third and fourth phases of the program will provide further assurance that there is consistency between design basis calculation results and Technical Specification surveillance requirements.