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AUTH.NAME AUTHOR AFFILIATION
 MEDFORD,M.O. Southern California Edison Co.
 RECIP.NAME RECIPIENT AFFILIATION

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SUBJECT: Responds to open items identified in Rev 1 to SER submitted
 on 880629 re evaluation of UFHA.

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Southern California Edison Company

P. O. BOX 800

2244 WALNUT GROVE AVENUE

ROSEMEAD, CALIFORNIA 91770

M. O. MEDFORD
MANAGER OF NUCLEAR ENGINEERING
AND LICENSING

TELEPHONE
(818) 302-1749

August 25, 1988

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

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3
(TAC Nos. 54814 and 54815)

By letter dated June 29, 1988, the NRC transmitted to Southern California Edison Company (SCE) Revision 1 to the Safety Evaluation Report (SER) related to evaluation of the Updated Fire Hazards Analysis (UFHA) for the San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS 2 and 3). The Revision 1 SER incorporates SCE's comments on the Revision 0 SER which were submitted to the NRC by letter dated April 21, 1988. The June 29, 1988 letter also requested that SCE provide responses to certain open items identified in the safety evaluation. This letter and the enclosures herein contain the requested responses.

Enclosure 1 provides the results of SCE's review of the fire protection guidelines contained in the NRC letter dated August 29, 1977 entitled, "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance" (FRACQA). The results indicate that some differences exist between the current SONGS 2 and 3 fire protection program and the NRC guidance. Enclosure 1 identifies these minor differences relative to the corresponding FRACQA letter paragraphs.

Enclosure 2 provides the final report to document SCE's Fire Area Boundary Penetration Seal Evaluation Program for SONGS 2 and 3. The program was designed to revalidate the testing basis for fire barrier penetration seal installation details which depict qualified preapproved seal configurations. Where a fire rated seal was not wholly represented by a test, the fire test was supplemented by an engineering evaluation to demonstrate the equivalent fire rating of the seal. In some instances, the fire rating of a seal was not supported by tests or evaluation. Seals found to not be supported by tests or evaluation were reviewed for acceptability for each specific application. All seals reviewed in this program were determined to be either (1) rated consistent with their associated barrier, (2) qualified by evaluation for use in the barrier or (3) in need of corrective action. For seals identified as requiring corrective action, SCE has implemented compensatory measures for the

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corresponding penetrated barriers in accordance with Technical Specification 3.7.9, "Fire Rated Assemblies." With the completion of the SONGS 2 and 3 Penetration Seal Program and subsequent implementation of compensatory measures in accordance with the technical specifications, interim compensatory measures for penetration seals are no longer necessary.

As discussed in previous submittals, SONGS 2 and 3 utilizes certain fire barriers which are considered to have been previously reviewed and accepted by the staff. During a December 1987 plant walkdown, the staff identified a number of such barriers under this category where the original descriptions of the barriers have changed and, therefore, acceptability of these barriers was unresolved. Enclosure 3 provides the necessary information to support SCE's position that certain selected barrier descriptions have not changed since the original FHA, and that the previous NRC approval remains valid. Barriers whose configuration is not consistent with that defined in the original FHA have been evaluated in accordance with Generic Letter 86-10.

As discussed previously, certain power lockout design changes were implemented to alleviate the potential impact of safe shutdown component spurious operation as a result of a fire. Enclosure 4 contains the requested 10 CFR 50.59 review of SCE's compliance with Branch Technical Position RSB 5-1 for Appendix R valve power lockout modifications.

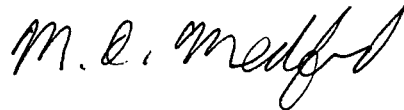
By letter dated January 21, 1988, SCE identified potential deviations from the guidelines contained in Generic Letter 81-12 with respect to maintenance and testing of electrical circuit interrupting devices utilized for Appendix R compliance. The NRC staff safety evaluation provided in the June 29, 1988 letter to SCE identified three open items on circuit interrupting devices and requested a response thereon. In regard to the first open item, pertaining to guideline (ii) of Generic Letter 81-12, circuit breaker and protective relay settings have been specified such that proper coordination is maintained. SCE's testing is performed on a rotating refueling outage basis to verify specified breaker settings and proper operation. Therefore, the circuit breaker testing program for low and medium voltage switchgear, described in our January 21, 1988 submittal, ensures that proper coordination is being maintained. Due to the significant effort currently required to return both SONGS 1 and 3 to service, SCE has been unable to devote sufficient time to the issue of testing of molded case circuit breakers in relation to guideline (iii) of Generic Letter 81-12. SCE expects to provide a response to the NRC by September 30, 1988 on periodic testing of molded case circuit breakers and the ability of technical specification surveillances to verify proper breaker coordination.

By letter dated May 6, 1988, SCE submitted proposed Technical Specification changes (Proposed Change Notice No. PCN-243) and proposed License Condition changes (PCN-244) to reflect the current SONGS 2 and 3 fire protection program. SCE intends that the above proposed changes supercede PCN-226 which was submitted for NRC review on February 2, 1987. Additionally, the information contained in this letter fulfills SCE's responsibilities to satisfy proposed License Conditions 2.C(14)2, 3 and 4 for Unit 2 and 2.C(12) 2, 3 and 4 for Unit 3 described in PCN-244.

In cases where this submittal revises positions reflected in previous fire protection submittals, the enclosed information supersedes that previously submitted.

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

Very truly yours,

A handwritten signature in cursive script, appearing to read "M. E. Medford".

Enclosures

cc: J. B. Martin, Regional Administrator, NRC Region V
F. R. Huey, NRC Senior Resident Inspector, San Onofre Units 1, 2 and 3
D. J. Kubicki, NRC Staff
C. B. Ramsey, Inspector, NRC Region V
T. Storey, SAIC

ENCLOSURE 1

CLARIFICATIONS TO SCE'S COMPLIANCE WITH NRC

FIRE PROTECTION PROGRAM GUIDANCE

Branch Technical Position 9.5-1, Appendix A (1977) defines elements of a fire protection program which the NRC considers appropriate for a nuclear power plant. SCE has indicated its compliance with these requirements in the Updated Fire Hazards Analysis for SONGS 1, 2 and 3. The NRC established additional guidance for fire protection programs in the memorandum entitled, Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance.

SCE has indicated that through the implementation of the fire protection program reflected in the UFHA that the intent of the Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance memorandum is satisfied by our current procedures and practices. To address an open item in the NRC review of the Updated Fire Hazards Analysis for SONGS 2 and 3, SCE has reevaluated conformance of our current fire protection program with the guidance contained in the NRC memorandum. This enclosure provides clarifications where our program differs from the NRC guidance. Where no clarification is indicated, SCE's fire protection program is consistent with the guidance.

Our fire protection program has been in existence for many years and has been the subject of NRC audits. In addition, the quality assurance program for fire protection is contained in SCE's Topical Report which has been reviewed and accepted by the NRC. The attached review summary reflects that the differences between the NRC guidance and the current SONGS fire protection program are minor. This result, in combination with the past NRC fire protection program reviews, demonstrates that the SONGS fire protection program has and will continue to meet the intent of the "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance" memorandum.

NUCLEAR PLANT FIRE PROTECTION FUNCTIONAL
RESPONSIBILITIES, ADMINISTRATIVE CONTROLS AND
QUALITY ASSURANCE

ATTACHMENT NO. 1: FIRE PROTECTION ORGANIZATION

- 1.0 The organizational responsibilities and lines of communication pertaining to fire protection should be defined between the various positions through the use of organizational charts and functional descriptions of each position's responsibilities. As a minimum the positions/organizations responsible for the following should be designated:
- a. The upper level offsite management position which has management responsibility for the formulation, implementation, and assessment of the effectiveness of the nuclear plant fire protection program.
 - b. The offsite management position(s) directly responsible for:
 - (1) formulating, implementing, and periodically assessing the effectiveness of the fire protection program for the licensee's nuclear power plant including fire drills and training conducted by the fire brigade and plant personnel. The results of these assessments should be reported to the upper level management position responsible for fire protection with recommendations for improvements or corrective actions as deemed necessary.
 - (2) Using the following NFPA Publications for guidance to develop the fire protection program:
 - No. 4 - "Organization for Fire Services"
 - No. 4A - "Organization of a Fire Department"
 - No. 6 - "Industrial Fire Loss Prevention"
 - No. 7 - "Management of Fire Emergencies"
 - No. 8 - "Management Responsibilities for Effects of Fire on Operations"
 - No. 27 - "Private Fire Brigades"

SCE Clarification

Paragraph 1.b

The onsite staffing is such that some of the responsibilities listed for the offsite management are performed by onsite management personnel.

- c. The onsite management position responsible for the overall administration of the plant operations and emergency plans which include the fire protection and prevention program and which provides a single point of control and contact for all contingencies.
- d. The onsite position(s) which:
 - (1) implements periodic inspections to: minimize the amount of combustibles in safety related areas; determine the effectiveness of housekeeping practices; assure the availability and acceptable condition of all fire protection systems/equipment, emergency breathing apparatus, emergency lighting, communication equipment, fire stops, penetration seals and fire retardant coatings; and assures prompt and effective corrective actions are taken to correct conditions adverse to fire protection and preclude their recurrence.
 - (2) is responsible for the fire fighting training for operating plant personnel and the plant's fire brigade; design and selection of equipment; periodic inspection and testing of fire protection systems and equipment in accordance with established procedures and evaluate test results and determine the acceptability of the systems under test.
 - (3) assists in the critique of all fire drills to determine how well the training objectives have been met.
 - (4) reviews and evaluates proposed work activities to identify potential transient fire loads.
 - (5) implements a program for indoctrination of all plant contractor personnel in appropriate administrative procedures which implement the fire protection program, and the emergency procedures relative to fire protection.
 - (6) implements a program for instruction of personnel on the proper handling of accidental events such as leaks or spills of flammable materials that are related to fire protection.

SCE Clarification

Paragraph 1.d(1)

Testing of PAX and UHF communications and/or equipment is performed in accordance with FCC requirements and/or industry practice. The systems are normally in use and thus their operability is continuously monitored. The testing of the PAX and UHF communications systems is not documented in formal station procedures.

SCE Clarification

Paragraph 1.d(4)

Procedures require that work groups identify the anticipated combustible material storage/staging locations associated with their activities. The anticipated loading is evaluated by the Fire Protection Group. In addition, weekly inspections are performed to verify that allowable combustible loading limits are not exceeded.

- e. The onsite position responsible for fire protection quality assurance.

This position should be responsible for assuring the effective implementation of the fire protection program by planned inspections and scheduled audits. He should assure and verify that results of these inspections or audits are promptly reported to cognizant management personnel.

- f. The positions which are part of the plant fire brigade:

- (1) The plant fire brigade positions should be responsible for fighting fires. The authority and responsibility of each fire brigade position relative to fire protection should be clearly defined.
- (2) The responsibilities of each fire brigade position should correspond with the actions required by the fire fighting procedures.
- (3) The responsibilities of the fire brigade members under normal plant conditions, should not conflict with their responsibilities during the fire emergency.
- (4) The minimum number of trained fire brigade members available onsite for each operating shift should be consistent with the activities required to combat the most significant fire. The size of the fire brigade should be based upon the functions required to fight fires with adequate allowance for injuries.
- (5) The recommendations for organization, training, and equipment of "PRIVATE FIRE BRIGADES" as specified in NFPA No. 27-1975, including the applicable NFPA publications listed in the Appendix to NFPA No. 27, are considered appropriate criteria for organizing, training, and operating a plant fire brigade.

SCE Clarification

Paragraph 1.f(4)

SONGS maintains a minimum of five members on the fire department at all times as required by the Technical Specifications.

2.0 Qualifications

- a. The position responsible for formulation and implementation of the Fire Protection Program should have, within his organization, or as a consultant, a Fire Protection Engineer is a graduate of an engineering curriculum of accepted standing and shall have completed not less than six years of engineering attainment indicative of growth in engineering competency and achievement, three of which shall have been in responsible charge of fire protection engineering work. These requirements are the eligibility requirements as a Member in the Society of Fire Protection Engineers.
- b. The fire brigade members qualifications should include satisfactory completion of a physical examination for performing strenuous activity, and of the fire brigade training described in Attachment No. 2.
- c. The personnel responsible for the maintenance and testing of the Fire Protection Systems should be qualified by training and experience for such work.
- d. The personnel responsible for the training of the firebrigade should be qualified by training and experience for such work.

NUCLEAR PLANT FIRE PROTECTION FUNCTIONAL
RESPONSIBILITIES, ADMINISTRATIVE CONTROLS AND
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ATTACHMENT NO. 2: FIRE BRIGADE TRAINING

SCE procedures are consistent with the guidance in this attachment.

NUCLEAR PLANT FIRE PROTECTION FUNCTIONAL
RESPONSIBILITIES, ADMINISTRATIVE CONTROLS AND
QUALITY ASSURANCE

ATTACHMENT NO. 3: CONTROL OF COMBUSTIBLES

Administrative controls should be established to minimize the amount of combustibles that a safety related area may be exposed to. These controls should be established to govern:

- a. the handling of and limitation on the use of combustibles, flammable and explosive hazards such as flammable gases and liquids, HEPA and charcoal filters, dry unused ion exchange resins or other combustible supplies in safety related areas, and to assure that these items are not stored in safety related areas.
- b. the transient fire loads during maintenance and modifications such as combustible and flammable liquids, wood and plastic products, spilled oil, oil drums, and other combustible materials in buildings containing safety related systems or equipment. This control should require an in-plant review of proposed work activities to identify potential transient fire loads. The onsite staff member designated the responsibility for reviewing work activities for potential transient fire loads should specify the required additional fire protection in the work activity procedure.

When the transient fire load causes the total fire load to exceed the capabilities of existing suppression systems and equipment, additional portable suppression equipment should be brought into the area.

- c. the removal of all waste, debris, scrap, rags, oil spills, or other combustibles resulting from the work activity, in the area following completion of the activity, or at the end of each work shift, whichever is sooner.
- d. periodic inspection for accumulation of combustibles.
- e. all wood used in safety related areas to assure that it is treated with flame-retardant.

SCE Clarification

Paragraph a

Some combustible material may be stored in safety related areas. If the material is not reflected in the UFHA, it is administratively controlled by Site procedures. The methodology used in developing these procedures evaluates the effect of the combustible loading on safety related/

safe shutdown equipment. These procedures require weekly inspections to verify that allowable combustible loading limits are not exceeded. Additionally, the procedures identify compensatory measures required if allowable limits are exceeded.

SCE Clarification

Paragraph b

Refer to Paragraph 1.d(4) clarification.

NUCLEAR PLANT FIRE PROTECTION FUNCTIONAL
RESPONSIBILITIES, ADMINISTRATIVE CONTROLS AND
QUALITY ASSURANCE

ATTACHMENT NO. 4: CONTROL OF IGNITION SOURCES

1.0 Administrative Controls

Administrative controls should be instituted to protect safety-related equipment from fire damage or loss resulting from work involving ignition sources, such as welding, cutting, grinding, or open flame work; administrative controls should prohibit the use of open flame or combustion smoke for leak testing and controls should prohibit smoking and other ignition sources in certain areas.

2.0 Control of Welding, Cutting, Grinding, and Open Flame Work

- a. All cutting, welding, grinding or open-flame work should be authorized by the responsible foreman or supervisor through a work permit. The responsible foreman or supervisor should have received a basic industrial fire fighting and fire prevention course covering anticipated fires, such as electrical fires, fires in cables and cable trays, hydrogen fires, hydrocarbon fires, solvent fires, waste/debris fires, and record file fires.

SCE Clarification

Paragraph 2.0.a

The firewatch associated with the open flame permits, not necessarily the supervisor, has been trained in basic industrial fire prevention and extinguishment. Both the firewatch and responsible supervisor verify the cleanliness of the area prior to and during such operations.

- b. Before issuing the permit, the responsible foreman or supervisor should physically survey the area where the work is to be performed and establish that the following precautions have been accomplished:
 - (1) All moveable combustible material below and within a 35-foot radius of the cutting, welding, grinding, or open flame work has been removed. (see NFPA 51B)
 - (2) All immovable combustible material below and within a 35-foot radius has been thoroughly protected by asbestos curtains, metal guards, or flameproof covers, and fire extinguishers, hose or other fire fighting equipment are provided at the work site. (see NFPA 51B)

- (3) A firewatch trained and equipped to prevent and combat fires is present throughout any operations in which there is potential for fire that might damage safety related equipment. A fire watch should be provided where cutting, welding, grinding or open flame is performed above or within a radius of 35 feet of any open cables, flammable liquids, scaffold boards, paper, rags, or other objects on the same elevation of the work or if combustible materials are below the work area where openings exist. A fire watch should be provided for all cutting, welding, grinding, and open flame work in the Control Room, Cable Spreading Room, Diesel Generator Rooms, and other safety related areas that contain significant amount of cable or flammable liquids. (see NFPA 518)

The fire watch should remain on the work site while work is performed and remain in the area for at least 30 minutes after the work is completed to check for smoldering fires.

- (4) All equipment to be used is in a safe, working condition. Oxyacetylene equipment is checked for leaks before being moved to the work area.
- c. The signature concurrence of a member of the plant's management or a quality control inspector certified to make this concurrence should be obtained whenever the supervisor or foreman determines that a firewatch is not required.

3.0 Leak Testing

Administrative procedures should be established to prohibit the use of open flame or combustion smoke for leak testing. Work orders for leak testing should require the concurrence of the shift engineer to verify that the leak test method is acceptable and would not present a potential ignition source.

SCE Clarification

Paragraph 3.0

Open flames are prohibited while performing leak testing. The onsite Fire Protection Group, rather than the shift engineer, reviews all barrier impairments associated with leak testing.

4.0 Smoking and Ignition Source Restriction

Smoking should be prohibited in safety related areas, except where "smoking permitted" areas have been specifically designated by a responsible member of plant management and in areas containing flammable or potentially explosive materials or atmospheres that present a hazard to safety related equipment. These areas should be identified with "No Smoking" signs.

NUCLEAR PLANT FIRE PROTECTION FUNCTIONAL
RESPONSIBILITIES, ADMINISTRATIVE CONTROLS AND
QUALITY ASSURANCE

ATTACHMENT NO. 5: FIRE FIGHTING PROCEDURES

Fire fighting procedures should be established to cover such items as notification of a fire, fire emergency procedures, and coordination of fire fighting activities with offsite fire departments. The fire fighting procedures should identify:

- a. Actions to be taken by individual discovering the fire, such as, notification of control room, attempt to extinguish fire, and actuation of local fire suppression systems.
- b. Actions to be taken by the control room operator and the need for brigade assistance upon report of a fire or receipt of alarm on control room annunciator panel, such as: announcing location of fire over PA system, sounding fire alarms and notifying the shift supervisor and the fire brigade leader of the type, size and location of the fire.
- c. Actions to be taken by the fire brigade after notification by the control room operator of a fire, including: location to assemble; directions given by fire brigade leader; and responsibilities of brigade members such as selection of fire fighting equipment and transportation to fire location, selection of protective equipment, use of fire suppression systems operating instructions, and use of pre-planned strategies for fighting fires in specific areas.
- d. The strategies established for fighting fires in all safety-related areas and areas presenting a hazard to safety-related equipment. As a minimum the following subjects should be covered:
 - (1) Identification of combustibles in each plant zone covered by the specific fire fighting procedures.
 - (2) Fire extinguishers best suited for controlling the fires associated with the combustible loadings in that zone and the nearest location of these extinguishers.
 - (3) Most favorable direction from which to attack a fire in each area, in view of the ventilation direction, access hallways, stairs and doors which are most likely to be fire-free, and the best station or elevation for fighting the fire. A specific identification system shall designate all hallways, stairs, doors, fire equipment and system control locations, and other items described in the fire

fighting procedures. This identification should be used in the procedures and the corresponding plant items should be prominently marked so that they can be recognized in dim light. All access and egress routes that involve locked doors should be specifically identified in the procedure with the appropriate precautions and methods for access specified.

- (4) Designation of plant systems that should be managed to reduce the damage potential during a local fire: location of local and remote controls for such management (e.g., any hydraulic or electrical system in the zone covered by the specific fire fighting procedure that could increase the hazards in the area because of overpressurization or electrical hazards).
- (5) Designation of vital heat-sensitive system components that should be kept cool while fighting a local fire. Critical equipment which are particularly hazardous combustible sources should be designated to receive cooling.
- (6) Organization of fire fighting brigades and the assignment of special duties according to job title so that all fire fighting functions are covered by any complete shift personnel complement. These duties should include command control of the brigade, fire hose laying, applying the extinguishers to the fire, advancing support supplies to the fire scene, communication with the control room, coordination with outside fire departments.
- (7) Identification of radiological and toxic hazards in fire zones.
- (8) Ventilation system operation that assures desired plant pressure distribution when the ventilation flow is modified for fire containment or smoke clearing operations.
- (9) Operations requiring control room and shift engineer coordination or authorization.
- (10) Instructions for plant operators and general plant personnel during fire.

SCE Clarifications

Paragraph d

Strategies (Fire Pre-Plans) have been established for all areas containing safety related/safe shutdown equipment. Only equipment required for safe shutdown is identified in the Fire Pre-Plans.

Paragraph d(3)

Locked doors are not specifically identified in fire fighting procedures/fire pre-plans. Security personnel are required to be at the fire scene for assistance.

Paragraph d (5)

Safe shutdown equipment susceptible to fire as well as exposure hazards are identified in Fire Pre-Plans and/or fire fighting procedures. This information is provided to allow the Fire Department captain and technical advisor to make decisions to minimize potential fire damage.

Paragraph d(8)

Smoke removal is accomplished by manual smoke removal equipment when normal ventilation systems are not available.

- e. The validity of the pre-planning strategies should be tested by appropriate full-dress drills to check the logic of the strategy, the adequacy of the equipment, personnel understanding, and to uncover unforeseen problems.
- f. Actions to be taken by Plant Superintendent and his staff, and Security Guards after notification of a fire.
- g. Actions to be take that will coordinate fire fighting activities with offsite fire departments, including: identification of individual responsible for assessing situation and calling in outside fire department assistance when needed; identification of individual who will direct fire fighting activities when aided by offsite fire fighting assistance; provisions for including offsite fire fighting organizations in fire brigade drills at least once per year; and provisions for training offsite fire department personnel in basic radiation principles, typical radiation hazards, and precautions to be taken in a fire involving radioactive materials in the plant. The procedures should also describe the offsite fire department's resources and estimated response time by the offsite fire department to provide assistance to the station.

NUCLEAR PLANT FIRE PROTECTION FUNCTIONAL
RESPONSIBILITIES, ADMINISTRATIVE CONTROLS AND
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ATTACHMENT NO. 6: QUALITY ASSURANCE

1.0 Design Control and Procurement Document Control - Measures should be established to assure that the applicable guidelines of the Regulatory Guide 1.120 or the approved NRC alternatives are included in design and procurement documents and that deviations there from are controlled. These measures should assure that:

- a. Design and procurement document changes, including field changes and design deviations are subject to the same level of controls, and approvals that were applicable to the original document.

SCE Clarification

Paragraph 1.0.a

The groups required to review design documents are defined by procedure. At the discretion of the originating organization, the review of design documents may be extended to groups beyond those required by procedure. With the exception of field changes, the review of changes to design documents will as a minimum include those groups required by procedure.

The scope of field changes to design documents (Field Change Notices, FCN's and Field Interim Design Change Notices, FIDCN's) is limited by procedure to minor changes (examples; adding clarifying notes which do not change the design, revision to drawings identifying acceptable design tolerances not requiring revision of design calculations). Due to the limited scope of these field design changes, a more limited review than is applied to design documents is defined by procedure.

In some instances, with proper approval, an FCN or FIDCN may be used for purposes which extend beyond the limited scope described above. In this case, the FCN or FIDCN is to be reviewed to the same level as required for the origination of the corresponding base document.

The groups required to review procurement documents are defined by procedure. At the discretion of the originating organization, the review of procurement documents may be extended to groups beyond those required by procedure. The review of the changes to the procurement documents will as a minimum include those groups which are required by procedure.

Supplier deviation requests may not be reviewed by the same organizations which approved the original specification criteria. The supplier deviation request must be approved by the Group Leader/responsible engineer, the Project Engineer and Quality Assurance. Most deviations from procurement document requirements involve details related to the implementation of the specification objectives and criteria and not changes to the objectives and criteria. Supplier deviation requests which may involve deviations from criteria may be referred by the Project Engineer to additional organizations for review.

- b. Quality standards are specified in the design documents such as appropriate fire protection codes and standards, and deviations and changes from these quality standards are controlled.

SCE Clarification

Paragraph 1.0.b

When commercial grade equipment is procured for fire protection systems, the procurement documents may specify equipment by catalog number rather than identify codes and standards. A separate document is prepared by SCE which documents that the commercial grade component satisfies the applicable fire protection codes and standards.

- c. New designs and plant modification, including fire protection systems, are reviewed by qualified personnel to assure inclusion of appropriate fire protection requirements. These reviews should include items such as:
 - (1) Design reviews to verify the adequacy of wiring isolation and cable separation criteria.
 - (2) Design reviews to verify appropriate requirements for room isolation (sealing penetrations, floors, and other fire barriers).

- d. A review and concurrence of the adequacy of fire protection requirements and quality requirements stated in procurement documents are performed and documented by qualified personnel.

This review should determine that fire protection requirements and quality requirements are correctly stated, inspectable and controllable; there are adequate acceptance and rejection criteria; and the procurement document has been prepared reviewed, and approved in accordance with QA program requirements.

- 2.0 Instructions, Procedures, and Drawings - Inspections, tests, administrative controls, fire drills, and training that govern the fire protection program should be prescribed by documented instructions, procedures, or drawings and should be accomplished in accordance with these documents. The following provisions should be included:
 - a. Indoctrination and training programs for fire prevention and fire fighting are implemented in accordance with documented instructions.
 - b. Activities such as design, installation, inspection, test, maintenance, and modification of fire protection systems are prescribed and accomplished in accordance with documented instructions, procedures, and drawings.
 - c. Instructions and procedures for design, installation, inspection, test, maintenance, modification and administrative controls are reviewed to assure that proper inclusion of fire protection requirements, such as precautions, control of ignition sources and combustibles, provisions for backup fire protection if the activity requires disabling a fire protection system, and restriction on material substitution unless specifically permitted by design and confirmed by design review.
- 3.0 Control of Purchased Material, Equipment, and Services - Measures shall be established to assure that purchased material, equipment and services conform to the procurement documents. These measures should include:
 - a. Provisions, as appropriate, for the source evaluation and selection, objective evidence of quality furnished by the contractor, inspections at suppliers, or receiving inspections.
 - b. Source or receiving inspection, as a minimum for those items whose quality cannot be verified after installation.
- 4.0 Inspection - A program for independent inspection of activities affecting fire protection should be established and executed by, or for, the organization performing the activity to verify conformance with documented drawings and test procedures for accomplishing activities. This program should include:

- a. Inspections of (1) installation, maintenance and modification of fire protection systems; and (2) emergency lighting and communication equipment to assure conformance to design and installation requirements.
- b. Inspection of penetration seals and fire retardant coating installations to verify the activity is satisfactorily completed.
- c. Inspection of cable rerouting to verify conformance with design requirements.
- d. Inspections to verify that appropriate requirements for room isolation (sealing penetrations, floors, and other fire barriers) are accomplished during construction.

SCE Clarification

Paragraph 4.0.d.

The requirements for room isolation is established during design and reflected in design documents. Inspections during construction activities verify that the design requirements as defined in the design documents are correctly implemented.

- e. Measures to assure that inspection personnel are independent from the individuals performing the activity being inspected and are knowledgeable in the design and installation requirements for fire protection.
- f. Inspection procedures, instructions, and check lists which provide for the following:
 - (1) Identification of characteristics and activities to be inspected.
 - (2) Identification of the individuals or groups responsible for performing the inspection operation.
 - (3) Acceptance and rejection criteria.
 - (4) A description of the method of inspection.
 - (5) Recording evidence of completing and verifying a manufacturing, inspection and or test operation.
 - (6) Recording inspector or data recorder and the results of the inspection operation.

- g. Periodic inspections of fire protection systems, emergency breathing and auxiliary equipment, emergency lighting, communication equipment to assure acceptable condition of these items.

SCE Clarification

Paragraph 4.0.g

The new sound powered phone system provides the communication capability to achieve and maintain safe shutdown. Periodic testing of the equipment will be performed consistent with that of Appendix R equipment.

Testing of PAX and UHF communications equipment which support fire department communications is performed in accordance with FCC requirements and/or industry practice. The systems are in normal use and thus their operability is continuously monitored. The testing of the PAX and UHF communications systems is not documented in formal station procedures.

- h. Periodic inspection of materials subject to degradation such as fire stops, seals, and fire retardant coatings to assure these items have not deteriorated or been damaged.

SCE Clarification

Paragraph 4.0.h

Inspections of fire barrier/seals are performed in accordance with the Technical Specifications.

- 5.0 Test and Test Control - A test program should be established and implemented to ensure that testing is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. The test should be performed in accordance with written test procedures; test results should be evaluated and acted on. The test program should include the following:

- a. Installation and testing - Following construction, modification, repair or replacement, sufficient testing is performed to demonstrate that fire protection systems, emergency lighting and communication equipment will perform satisfactorily in service and that design criteria are met. Written test procedures for installation tests incorporate the requirements and acceptance limits contained in applicable design documents.

- b. Periodic testing - The schedules and methods for periodic testing are developed and documented. Fire protection equipment, emergency lighting and communication equipment are tested periodically to assure that the equipment will properly function and continue to meet the design criteria.

SCE Clarification

Paragraph 5.0.b.

Periodic testing of emergency lights is performed for 8 hour emergency lighting units provided for operator actions for post fire safe shutdown including designated pathways for access to safe shutdown equipment.

See Paragraph 4.0.g. for clarification of the testing of communications equipment.

- c. Programs are established for QA/QC to verify testing of fire protection systems and to verify that test personnel are effectively trained.
- d. Test results are documented, evaluated, and their acceptability determined by qualified responsible individual or group.

6.0 Inspection, Test, and Operating Status - Measures should be established to provide for the identification of items that have satisfactorily passed required tests and inspections. These measures should include provisions for:

- a. Identification by means of tags, labels, or similar temporary markings to indicate completion of required inspections and tests, and operating status.

SCE Clarification

Paragraph 6.0.a.

Existing computerized tracking systems are the primary means by which deficiencies are tracked and resolved. Equipment status reports are available which identify inoperable fire protection equipment.

Inoperable PAX and UHF equipment is tracked separately by the Telecommunications Department.

7.0 Nonconforming Items - Measures should be established to control items that do not conform to specified requirements to prevent inadvertent use of installation. These measures should include provisions to assure that:

- a. Nonconforming, inoperative, or malfunctioning fire protection systems, emergency lighting and communication equipment are appropriately tagged or labeled.

SCE Clarification

Paragraph 7.0.a

Refer to clarification to Paragraph 6.0.a

- b. The identification, documentation, segregation, review, disposition, and notification to the affected organization of nonconforming materials, parts, components, or services are procedurally controlled.
- c. Documentation identifies the nonconforming item, describes the nonconformance and the disposition of the nonconforming item and includes the signature approval of the disposition.

Provisions are established identifying those individuals or groups delegated the responsibility and authority for the disposition and approval of nonconforming items.

8.0 Corrective Action - Measures shall be established to ensure that conditions adverse to fire protection such as failures, malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material and nonconformances are promptly identified, reported and corrected. These measures should assure:

- a. Procedures are established for evaluation of conditions adverse to fire protection (such as nonconformance, failures, malfunction, deviations, and defective material and equipment) to determine the necessary corrective action.
- b. In the case of significant or repetitive conditions adverse to fire protection, including fire incidents, the cause of the conditions is determined and analyzed, and prompt corrective actions are taken to preclude recurrence. The cause of the condition and the corrective action taken are promptly reported to cognizant levels of management for review and assessment.

9.0 Records - Records should be prepare and maintained to furnish evidence that the criteria enumerated above are being met for activities affecting the fire protection program. The following provisions should be included:

- a. Records are identifiable and retrievable and should demonstrate conformance to fire protection requirements. The records should include the results of inspections, tests, reviews, and audits; nonconformance and corrective action reports; construction, maintenance and modification records; and certified manufactures' data.
 - b. Record retention requirements are established.
10. Audits - Audits should be conducted and documented to verify compliance with the fire protection program including design and procurement documents, instructions, procedures and drawings, and inspection and test activities. The following provisions should be included:
- a. Audits are periodically performed to verify compliance with the administrative controls and quality assurance criteria including design and procurement, instructions, procedures and drawings and inspection and test activities. These audits are performed by QA personnel in accordance with preestablished written procedures or check lists and conducted by trained personnel not having direct responsibilities in the areas being audited.
 - b. Audit results are documented and then reviewed with management having responsibility in the area audited.
 - c. Followup action is taken by responsible management to correct deficiencies revealed by the audit.
 - d. Audits are annually performed to provide an overall assessment of conformance to fire protection requirements.

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ENCLOSURE 2

SONGS 2 AND 3 FIRE AREA BOUNDARY PENETRATION
SEAL EVALUATION PROGRAM

As discussed in our revised response to NRC Request for Additional Information No. 4 (Enclosure 1 to SCE's letter dated November 20, 1987), a reevaluation of the qualification of penetration seals used in fire area/zone boundaries at SONGS 2 and 3 has been performed. The program evaluated the testing basis for fire rated penetration seal designs used in the plant. The scope of the seal evaluation program included seals in fire area/zone boundaries credited for the protection of safe shutdown equipment (Appendix R barriers) and those in barriers which are required to be 3 hour rated barriers by Branch Technical Position (BTP) 9.5-1, Appendix A, Section F. For seals in fire barriers which were found not to be fully supported by test, the adequacy of the seal was evaluated in accordance with the guidance of Generic Letter 86-10. The evaluation program included field walkdowns, review of installation and maintenance procedures, and the rework of penetration seals, as required. This enclosure provides the full report on the seal evaluation program including criteria, methodology, results and conclusions.

ENCLOSURE 3

PREVIOUSLY APPROVED FIRE AREA BOUNDARIES

SCE has reassessed the SONGS 2 and 3 fire area boundaries which were previously approved under the Appendix A review process. Fire barriers whose present configuration is not consistent with that defined in the original Fire Hazards Analysis are no longer considered to be previously approved and have been evaluated in accordance with Generic Letter 86-10.

The previously approved fire area boundaries are 2-hour rated barriers with 2-hour rated seals, 1 1/2-hour rated doors and 1 1/2-hour rated dampers. These barriers were previously identified as either 2 hour rated or heavy concrete in the original Fire Hazards Analysis. In some instances, the fire area on one side of the previously approved fire barrier was not labeled as a fire area in the original Fire Hazards Analysis, but has been assigned a fire area designation in the Updated Fire Hazards Analysis (an example is staircases). Since the fire barrier was depicted in the original Fire Hazards Analysis and its current rating equals or exceeds that defined in the original Fire Hazards Analysis, the barrier is considered to be previously approved.

ENCLOSURE 4

10 CFR 50.59 EVALUATION FOR APPENDIX R

POWER LOCKOUT VALVE MODIFICATIONS

The SONGS 2 and 3 Appendix R analysis considered hot shorts per Generic Letter 86-10. Generic Letter 86-10 provides specific guidance for postulating shorting of the power and control cables to valves, which could result in spurious valve operation. As a result, power has been locked out for various valves to prevent spurious operation. This 10 CFR 50.59 safety evaluation addresses these power lockout modifications and their impact on the plant shutdown in accordance with Branch Technical Position (BTP) RSB 5-1. The motor operated valves (MOVs) which have been power locked out for Appendix R considerations are Shutdown Cooling valves 2HV-9337, 3HV-9337, 2HV-9377 and 3HV-9377, Pressurizer Auxiliary Spray valves 2HV-9201, and 3HV-9201 and Component Cooling Water System valves 2HV-6222A, 3HV-6222A, 2HV-6224A, 3HV-6224A, 2HV-6226A, 3HV-6226A, 2HV-6227, 3HV-6227, 2HV-6228A, 3HV-6228A, 2HV-6229, and 3HV-6229. Since the valves are identical for both units, the SONGS unit designations have been omitted in the discussion below which pertains to both units.

Shutdown Cooling System Valves HV-9337 and HV-9377

The Shutdown Cooling System (SDCS) is required to be isolated from the Reactor Coolant System (RCS) during normal plant operation, emergency shutdown and post-LOCA operation when RCS system pressure is greater than the SDCS design pressure limits. The isolation of SDCS is achieved by maintaining two parallel paths of SDCS suction line isolation valves (MOVs HV-9337 in series with HV-9338 and HV-9377 in series with HV-9378) closed through key locked control room switches. These two parallel pairs of valves are located inside containment. Initially these valves are closed for containment isolation and are required to be open for long term decay heat removal.

Fire damage to MOV power or control circuits could defeat the keylock feature as well as other safety interlocks and spuriously open these valves. Inadvertent opening of these valves would result in a loss of coolant accident. In order to preclude this, power lockout has been implemented at the 480V power source breakers MCC BE and Inverter Y006 for MOVs HV-9337 and MOV HV-9377, respectively. Therefore, operator action is required outside the control room (at the train A switchgear room and the train C distribution panel room, elev. 50' control building) to restore power (re-energize) to these valves prior to initiation of SDCS flow.

Pressurizer Auxiliary Spray Valve HV-9201

The pressurizer auxiliary spray system is provided to allow depressurization of the Reactor Coolant System (RCS) in the event that normal pressurizer spray capability is not available. Valve HV-9201 is located in a branch line of the RCS charging line downstream of the regenerative heat exchanger. The valve is normally closed and is required to be throttled for safe shutdown.

Fire damage to MOV power or control circuits could defeat the keylock feature and spuriously open this valve. Inadvertent opening of this valve could result in a diversion of normal charging flow and inadvertent actuation of pressurizer spray. In order to preclude this, power lockout of the MOV has been implemented at the 480V power source breaker MCC BE. Therefore, operator action is required outside the control room (train A switchgear room, elev. 50' control building) to restore power to this valve to enable subsequent remote operation of the valve from the control room to initiate pressurizer auxiliary spray for RCS depressurization.

Component Cooling Water Crosstie Valves HV-6222A, HV-6224A, HV-6226A, HV-6227, HV-6228A and HV-6229

Component cooling water system crosstie valves provide the capability to align the CCW "swing" pump, P-025, to one of the CCW independent loops (A or B). The interconnection involves proper alignment of two suction valves (HV-6222A, -6224A), two discharge valves (HV-6226A, -6228A) and a CCW pump motor cooling water valve (HV-6227 or HV-6229).

Fire damage to these CCW valve power or control circuits could defeat system interlocks and spuriously open these normally closed valves. This may result in cross-tying of the two independent CCW loops which could adversely affect CCW system operation. The preceding has been precluded by power lockout of 480V MCC feeder breakers of the appropriate CCW valves. During normal operation, valves HV-6222A, HV-6224A, HV-6226A, HV-6228A, HV-6227 and HV-6229 are locked in position by opening the corresponding circuit breakers of MCCs BX and BP. These valves are maintained in their safe shutdown position; hence, operator action to restore power to these CCW valves is not necessary to achieve safe shutdown or to mitigate the effects of design basis accidents.

Safety Evaluation

1. Will the probability of occurrence of an accident or malfunction of any equipment important to safety previously evaluated in the FSAR be increased?

Response: NO

Shutdown Cooling System (HV-9337, HV-9377)

Manual operator action is required at the MCC to restore power to the SDC system valves HV-9337 and HV-9377 prior to use of the SDC system. The restoration of power is accomplished in the train A switchgear room and the train C distribution panel room, respectively, which are located one elevation above the Control Room. This operator action will occur in the same time frame as those operator actions previously reviewed and approved in Section 5.4.3 of the SER. In reviewing operator action against BTP RSB 5-1, the SER documents NRC acceptance of similar operator actions performed outside the Control Room at the motor control centers in the switchgear rooms. The train C distribution panel room is in close

proximity to the switchgear rooms. Like the switchgear rooms, the distribution panel room (elev. 50' control building) is remote from process piping and is in a low radiation area. The action required to restore power to these valves is of short duration and repeated access is not required.

Pressurizer Auxiliary Spray Valve (HV-9201)

The pressurizer auxiliary spray system is provided to allow depressurization of the RCS in the event that the normal pressurizer spray capability is not available. Manual operator action is required in the train A switchgear room to restore power to the auxiliary spray valve. The operator action is similar to and the in same room as operator actions previously reviewed and accepted by the NRC in SER. This action is of short duration and repeated access is not required.

Component Cooling Water System (CCW) HV-6222A, HV-6224A, HV-6226A, HV-6228A, HV-6227 and HV-6229

Restoration of these valves is not required for a BTP RSB 5-1 shutdown scenario since realignment of the CCW swing pump is unnecessary due to the redundant train A and B pumps. Therefore, operator action to restore power to these valves is not required.

As describe above, the power lockout of the valves addressed above does not adversely affect the probability of occurrence of an accident or malfunction of any equipment important to safety previously evaluated in the UFSAR. These power lockouts will, in fact, preclude spurious actuation of these valves thereby enhancing plant safety.

2. Will the consequences of an accident or malfunction of equipment important to safety previously evaluated in the UFSAR be increased?

Response: NO

The operability of the SDC system valves and pressurizer auxiliary spray valve is ensured for normal and emergency plant conditions by preventing spurious operation. The Shutdown Cooling System Failure Mode and Effects Analysis (Table 5.4-7), the Component Cooling Water System Failure Mode and Effects Analysis (Table 9.2.3) and Chemical and Volume Control System Failure Mode and Effects Analysis (Table 9.3-13, item 45) are unaffected by the power lockout feature. Additionally, the power lockout of the subject valves is consistent with NRC approval of previous power lockout valves as documented in Section 5.4.3 of the SER.

Therefore, the consequences of an accident or malfunction of equipment important to safety previously evaluated in the UFSAR will not be increased.

3. Will the possibility of an accident or malfunction of a different type than any previously evaluated in the UFSAR be created?

Response: NO

The power lockout precludes spurious actuation of these valves due to fire-induced hot shorts. The capability of these valves to perform their function is enhanced, not degraded, due to the power lockout feature. Therefore the possibility of an accident or malfunction of a different type than any previously evaluated in the UFSAR will not be created.

4. Will the margin of safety as defined in the basis of any Technical Specification be reduced?

Response: NO

The power lockout of these valves does not impact any Technical Specification limiting condition of operation, parameter or existing surveillance requirement. As such no Technical Specification basis or associated margin of safety are affected.

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