UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Application of SOUTHERN CALIFORNIA EDISON COMPANY, et al. for a Class 103 License to Acquire, Possess, and Use a Utilization Facility as Part of Unit No. 2 of the San Onofre Nuclear Generating Station.	)	Docket No. 50-361 Amendment Application No. 138, Supplement 1

SOUTHERN CALIFORNIA EDISON COMPANY, et al. pursuant to 10 CFR 50.90, hereby submit Amendment Application No. 138, Supplement 1.

This amendment application consists of Supplement 1 to Proposed Change No. NPF-10-433 to Facility Operating License No. NPF-10. Proposed Change No. NPF-10-433 is a request to revise the Updated Final Safety Analysis Report (UFSAR), Section 3.5, "Missile Protection," to allow the use of probability of damage to critical components in evaluating tornado-generated missile protection barriers.

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Subscribed on this 14th day of November, 1997.

Respectfully submitted,

SOUTHERN CALIFORNIA EDISON COMPANY

By: Dwight E. Nunn

Dwight E. Nunn
Vice President

State of California
County of San Diego

On 11/14/97 before me, Mariane Sanchez, personally appeared Dwight E. Nunn, personally known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Signature Mariane Sanchez

MARIANE SANCHEZ
COMM. # 1033763
Notary Public — California
ORANGE COUNTY
My Comm. Expires OCT 14, 1998

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Application of SOUTHERN CALIFORNIA EDISON COMPANY, et al. for a Class 103 License to Acquire, Possess, and Use a Utilization Facility as Part of Unit No. 3 of the San Onofre Nuclear Generating Station.	))))))	Docket No. 50-362 Amendment Application No. 122, Supplement 1

SOUTHERN CALIFORNIA EDISON COMPANY, et al. pursuant to 10 CFR 50.90, hereby submit Amendment Application No. 122, Supplement 1.

This amendment application consists of Supplement 1 to Proposed Change No. NPF-15-433 to Facility Operating License No. NPF-15. Proposed Change No. NPF-15-433 is a request to revise the Updated Final Safety Analysis Report (UFSAR), Section 3.5, "Missile Protection," to allow the use of probability of damage to critical components in evaluating tornado-generated missile protection barriers.

Subscribed on this 14th day of November, 1997.

Respectfully submitted,

SOUTHERN CALIFORNIA EDISON COMPANY

By: _____

Dwight E. Nunn
Vice President

State of California
County of San Diego

On 11/14/97 before me, Mariane Sanchez, personally appeared DWIGHT E. NUNN, personally known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

MARIANE SANCHEZ
COMM. # 1033763
Notary Public — California
ORANGE COUNTY
My Comm. Expires OCT 14, 1998

Signature _____

DESCRIPTION AND SAFETY ANALYSIS
OF PROPOSED CHANGE NPF-10/15-433, SUPPLEMENT 1
PROPOSED LICENSE AMENDMENT TO USE NUREG-0800, "STANDARD REVIEW PLAN,"
METHODOLOGY TO EVALUATE TORNADO-GENERATED MISSILE HAZARDS
SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3

This proposed change to the Updated Final Safety Analysis Report (UFSAR) is a request to change the licensing basis of San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 to evaluate tornado-generated missile hazards consistent with NUREG-0800, "Standard Review Plan" (SRP).

Existing UFSAR, Section 3.5

Attachment "A"

Proposed UFSAR, Section 3.5

Attachment "B"

DESCRIPTION OF CHANGES:

Section 3.5, "Missile Protection," of the UFSAR is proposed to be changed to allow the use of probability of damage to critical components in evaluating tornado-generated missile protection barriers. The probability of a missile strike damaging exposed critical components of less than 1.0 E-7 per year will be used as a conservative threshold for evaluating plant design changes.

The original PCN 433 (Reference) proposed that a table be added to the UFSAR showing the contributions to core damage frequency from exposed critical components. Supplement 1 to PCN 433 proposes to modify this proposed table to reflect recently identified cases of exposed critical equipment, as well as change the basis for acceptability from core damage frequency to probability of damage to exposed critical equipment.

Proposed Table 3.5-13, "Annual Probability of Damage to Critical Components Exposed to Tornado Missiles" will list the total probability of damage to exposed critical components, as well as the area and individual contribution to probability of damage for each group of exposed critical components. This table shows that the current total probability of 0.2 E-7 is below the acceptance criterion of 1.0E-7 and results in a remaining margin of 0.8 E-7.

UFSAR Section 3.5.2.3, "Barriers for Missiles Generated by Natural Phenomena (Tornado)" and Table 3.5-12, "Missile Barriers for Tornado Missiles," will be modified to refer to "critical" equipment instead of "protected" equipment.

BACKGROUND:

UFSAR paragraph 3.5.D, "Tornado Missiles," states the basis for protecting equipment against damage due to tornado-generated missiles for SONGS Units 2 and 3:

> "Missiles generated by a tornado, which have velocities equal to or less than the design velocities, shall not cause a LOCA or failure of the containment or control room walls or cause loss of integrity to the spent fuel pool and fuel handling and storage facilities. They shall not cause loss of function of any system required for safe shutdown."

This PCN 433, Supplement 1 defines all equipment covered by UFSAR Section 3.5.D as "critical" components. The original SONGS 2 and 3 licensing basis assumed a tornado-generated missile strike to all exposed critical components. Barriers to protect against these missiles were therefore designed and constructed for all critical components as listed in UFSAR Table 3.5-12. UFSAR Section 3.5.2.3 and Table 3.5-12 refer to these components as "protected components." Therefore, under the current licensing basis in which all critical components are protected, the terms "critical" and "protected" are equivalent.

Regulatory Guide 1.117, "Tornado Design Classification," provides a list of critical components that should be protected from tornado-generated missiles that is acceptable to the NRC. The Regulatory Guide was issued after the SONGS Final Safety Analysis Report was submitted to the NRC. Differences between the list of critical components in Regulatory Guide 1.117 and in UFSAR Table 3.5-12 were discussed with the NRC during the Question and Response process, and the NRC approved Table 3.5-12 in its Safety Evaluation Report (SER).

By letter dated November 24, 1980, from Mr. K. P. Baskin [Southern California Edison (SCE)] to Mr. F. Miraglia (NRC), SCE committed to protect the SONGS 2 and 3 Auxiliary Feedwater (AFW) system from the tornado-generated missiles listed in UFSAR Table 3.5-6, consistent with the criteria used for tornado-generated missile protection for other plant safe shutdown components. During the resolution of calculation concerns raised by an SCE internal audit for the design of missile protection structures, SCE determined that the missile barriers for portions of the SONGS 2 and 3 AFW system do not fully satisfy this licensing commitment (Ref.: Voluntary Licensee Event Report 2-93-006). The original PCN 433 was submitted to address this problem.

Since the submittal of the original PCN 433, SCE has identified additional cases of critical components which cannot be considered protected from damage due to tornado missiles. These components include 1) Piping, tubing, and valves associated with the component cooling water backup nitrogen system, 2) Portions of protected equipment exposed by seismic gaps between buildings, and

3) Portions of protected electrical equipment exposed by miscellaneous openings in the auxiliary building west wall and roof. Supplement 1 to PCN 433 is being submitted to address these new cases.

DISCUSSION

The original PCN 433 used Probabilistic Risk Assessment (PRA) methods to justify the exposure of critical components to tornado-generated missile strikes. This was accomplished by calculating the total contribution to core damage frequency from missile strikes on exposed critical components. This value was then compared to the Standard Review Plan (SRP) requirements for tornado missile barrier protection.

Supplement 1 to PCN 433 requests use of a probability of damage to critical exposed equipment as the licensing basis for tornado missile barrier protection. As in the original PCN 433, the acceptance criteria for this basis is derived from SRP requirements.

An analysis was performed to determine the total probability (per Unit per year) of damage to critical components exposed to tornado missile strikes. For each Fujita class of tornado (0 to 5), this analysis examined tornado frequency, probability of a missile strike, and conditional probability of component damage due to a missile strike. The following simplifying assumptions were made:

1) An F'0 tornado would not generate a tornado missile with enough energy to damage any exposed critical equipment.

2) "Light equipment," such as cables, tubing, small bore pipe, etc., is conservatively assumed to be damaged by any strike from a tornado missile generated by tornado classes F'1 to 5.

3) "Heavy equipment," such as pumps, large bore pipe, valves, etc., is conservatively assumed to be damaged by any strike from a tornado missile generated by tornado classes F'3 to F'5.

The resulting annual probabilities of damage to exposed critical components per unit per square foot are as follows:

Light Equipment: 8 E-12/yr-ft^2
Heavy Equipment: 3 E-12/yr-ft^2

For each case of exposed critical equipment, the area of exposure may be multiplied by one of these probabilities to give the annual probability of

damage. Summing over each case gives a total annual probability of damage to exposed critical components per unit of 0.2 E-7/yr. These values are displayed in proposed UFSAR Table 3.5-13.

The result of 0.2 E-7/yr is acceptable when compared to the acceptance criteria of 1.0 E-7/yr. The value for the acceptance criteria is chosen based on a review of Standard Review Plan (SRP) Section 3.5.1.4, "Missiles Generated by Natural Phenomena," and SRP Rev. 1, Section 3.5.1.5, "Site Proximity Missiles (Except Aircraft)." Table 1 provides a comparison of the SRP and the proposed licensing basis of SONGS 2 and 3.

It is important to note that Revision 2 of the SRP refers to Regulatory Guide 1.117 for acceptance criteria. In addition to including acceptance criteria for missile barrier protection, Regulatory Guide 1.117 also includes a population of critical components which is different from that in SONGS UFSAR Table 3.5-12. SCE intends to apply the methodology of the SRP acceptance criteria to the approved list of critical components in UFSAR Table 3.5-12, not to the list of critical components found in Regulatory Guide 1.117. As discussed above, the discrepancies between the critical components listed in Regulatory Guide 1.117 and SONGS UFSAR Table 3.5-12 have already been reviewed and approved by the NRC. Supplement 1 to PCN 433 does not request any change to the SONGS 2 and 3 licensing basis that would modify the population of critical components.

In accordance with this change, some of the critical components listed as "protected components" in the existing UFSAR Table 3.5-12 will be considered exposed to tornado-generated missiles and are no longer "protected components." Therefore, to clarify that some components which were previously considered as protected are now considered to be exposed to a tornado-generated missile strike, the phrase "protected components" will be changed to "critical components" in UFSAR Table 3.5-12 and in UFSAR Section 3.5.2.3, which refers to Table 3.5-12. Critical components which are exposed to tornado-generated missiles will be listed explicitly in proposed UFSAR Table 3.5-13.

The probability of damage to exposed critical components as listed in the proposed UFSAR Table 3.5-13 is based in part on procedural actions which limit the area of exposed critical components (e.g., isolating the Condensate Transfer Piping downstream of valves HV-5715 and 1414MU092 on receipt of a Severe Weather Warning). All procedure changes necessary to support these assumptions will be completed by December 31, 1997.

Reference: February 1, 1994 letter from R. M. Rosenblum (SCE) to Document Control Desk (NRC). Subject: Amendment Application Nos. 138 and 122, Use of NUREG-0800 Standard Review Plan Guidance in Evaluating Tornado-Generated Missile Barriers

Table 1

SRP and SONGS 2 and 3 Proposed Licensing Basis
Acceptance Criteria Comparison

SRP Section 3.5.1.4, Rev. 0, Missiles Generated by Natural Phenomena	Tornado-generated missiles protection is not required if the aggregate probability of a missile strike is less than 10^{-7} per year.
SRP Section 3.5...4, Rev. 1, Missiles Generated by Natural Phenomena	Tornado-generated missile protection is not required if the aggregate probability of a missile strike is less than 10^{-7} per year
SRP Section 3.5.1.4, Rev. 2, Missiles Generated by Natural Phenomena	Tornado-generated missile protection is not required if the annual probability per unit to the total of all critical components is less than that stated in Regulatory Guide 1.117. However, Regulatory Guide 1.117 does not clearly specify an acceptable probability.
SRP Section 3.5.1.5, Rev. 1, Site Proximity Missiles (Except Aircraft)	Acceptance criteria is met if the probability of site proximity missiles impacting the plant and causing radiological consequences greater than 10 CFR Part 100 exposure guidelines is less than about 10^{-7} per year.
SONGS 2 and 3 proposed Licensing Basis	Tornado-generated missile protection is not required if the aggregate probability of damage to exposed critical components due to a tornado-generated missile strike is less than 10^{-7} per unit per year

SAFETY ANALYSIS:

The proposed change described above shall be deemed to involve a significant hazards consideration if there is a positive finding in any one of the following areas:

(1) Will operation of the facility in accordance with this proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

NUREG-0800, Standard Review Plan (SRP) Section 3.5.1.4, Revision 0 and Section 3.5.1.5 Revision 1 provide a conservatively acceptable probability threshold for safety due to damage caused by postulated missile strikes. Section 3.5.1.4, Revision 0 uses 10^{-7} per year for a tornado-generated missile strike, and Section 3.5.1.5 Revision 1 uses 10^{-7} per year for exceeding 10 CFR Part 100 limits.

The proposed criteria of probability of damage to critical exposed equipment (as defined in San Onofre Updated Final Safety Analysis Report proposed Table 3.5-13) of 10^{-7} per year per unit is consistent with this guidance.

The probability of damage to exposed critical components due to a postulated missile strike of 10^{-7} is so small as to be negligible. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

(2) Will operation of the facility in accordance with this proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

This amendment request establishes a conservative criteria for tornado-generated missiles consistent with the SRP guidance and will not create a new or different kind of accident from any accident that has been previously evaluated.

(3) Will operation of the facility in accordance with this proposed change involve a significant reduction in a margin of safety?

Response: No.

This proposed change is consistent with the methodology and acceptance criteria of the SRP, and the SRP criteria ensures that there will be no undue risk to the health and safety of the public. Therefore, there will be no significant reduction in a margin of safety.

SAFETY AND SIGNIFICANT HAZARDS DETERMINATION:

Based on the above Safety Analysis, it is concluded that: 1) the proposed change does not constitute a significant hazards consideration as defined by 10 CFR 50.92 and 2) there is reasonable assurance that the health and safety of the public will not be endangered by the proposed change. Moreover, because this action does not involve a significant hazards consideration, it will also not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.