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SUBJECT: Application for amends to Licenses NPF-10 & NPF-15, consisting of Proposed Change Notice 215, revising Tech Spec 3/4.8.1, "AC Sources," to add unit-to-unit load transfer switch & modify bus tie breaker controls. Fee paid.

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May 2, 1986

Director, Office of Nuclear Reactor Regulation
Attention: Mr. George W. Knighton, Director
PWR Project Directorate No. 7
Division of PWR Licensing - B
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

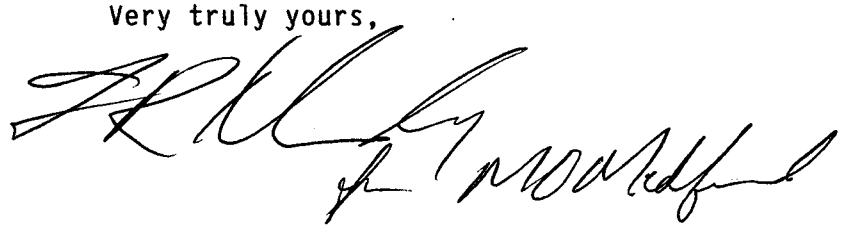
Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

The purpose of this letter is to transmit proposed changed NPF-10/15-215 to the NRC. PCN 215 revises Technical Specification 3/4.8.1, "A. C. Sources." The associated proposed design change will add a Unit-to-Unit load transfer enable switch and modify the bus tie breaker controls. The proposed technical specification change along with its associated proposed design change will allow a Unit 3 diesel generator to provide emergency power to Unit 2 emergency buses and vice-versa and allow credit to be taken for an operable diesel generator on the opposite Unit. The change will allow added plant operations flexibility and increase plant availability.

In accordance with 10 CFR 170.12, enclosed is the required amendment application fee of $150.00. A formal request for this change will be included in our next formal amendment application.

If you have any questions, please contact me.

Very truly yours,



cc: Harry Rood, NRC Project Manger (to be opened by addressee only)
F. R. Huey, USNRC Senior Resident Inspector, Units 1, 2 and 3

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Description of Proposed Changes NPF-10/15-215, Rev. 1
and Safety Analysis

This is a request to revise Technical Specification 3/4.8.1, "A.C. Sources."

Existing Technical Specifications

Unit 2: See Attachment A
Unit 3: See Attachment C

Proposed Technical Specifications

Unit 2: See Attachment B
Unit 3: See Attachment D

Description

The proposed change revises Technical Specification 3/4.8.1, "A.C. Sources." The proposed design change, Work Request 6094E, will add a Unit-to-Unit load transfer enable switch and modify the bus tie breaker controls. This switch will be selected to "OFF" when its associated diesel generator is operable and to "AUTO" when its diesel is inoperable. In Technical Specification 3/4.8.1., the definition of operable for diesel generators is changed to allow for one of the separate and independent diesel generators to be from the other unit if certain conditions are met.

Diesel generator operability is defined in existing Technical Specification 3/4.8.1.1 as two separate and independent dedicated diesel generators. Technical Specification 3/4.8.1.1 requires that if a diesel generator failure occurs or maintenance is required on one of the two diesel generators, the unit with the affected diesel generator must either complete repairs or maintenance within 72 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. The proposed changes to Technical Specification 3/4.8.1.1 would redefine operability for the diesel generators to permit one of the separate and independent diesel generators to be from the other (unaffected) unit, if certain conditions are met.

Currently, each load group for a unit has access to four sources of power, as described below:

- Source 1 - The preferred offsite feeds.
- Source 2 - Offsite power supplied through the other unit's feeder breakers and the unit-to-unit tie breakers.
- Source 3 - The load group's associated diesel generator.
- Source 4 - A third access to offsite power which can be supplied in approximately 12 hours.

A summary description of the automatic transfer capability that exists with the present design, between the emergency buses of each unit, is provided below. While only one load group (i.e., Unit 2 train A) is discussed here, as an example, similar operations will take place on the redundant load group in each unit.

The Unit 2 train A ESF bus normally is powered from the preferred offsite feeds identified above as source 1. If source 1 is lost, the Unit 2 train A ESF bus power source 2 would be initiated/attempted through the Unit 3 train A cross tie breakers. That is, if Unit 3 train A is being powered from its preferred offsite feeds, it would also power the Unit 2 train A ESF bus. However, if Unit 3 train A is either without power, or if it were being powered from its associated diesel generator, the Unit 2 train A bus is automatically prevented from receiving power from that source. While transfer to source 2 is being attempted, the loss of voltage signal (LOVS) of the Unit 2 train A bus would concurrently send a signal to the Unit 2 train A diesel generator to start.

Should the Unit 3 train A preferred power source not be available to power the Unit 2 train A bus, then the Unit 2 train A diesel generator will start and supply power from source 3 (approximately 10 seconds after the LOV signal has been initiated). Should the Unit 2 train A diesel generator not be available, then the train A ESF loads would be without power at that time (and until either the diesel generator is repaired, the offsite power is restored, or the unit is shutdown to make source 4 power available).

With the proposed design change, the same sequence of events described above for the existing system description would occur except that, with the transfer enable switch in "AUTO", the Unit 3 train A diesel generator would receive a start signal at the same time the Unit 2 train A diesel generator receives its start signal. The Unit 2 train A bus, then would be connected to and powered by the available Unit 3 train A diesel generator.

Therefore, with the proposed design change, should Unit 2 train A power source 3 be unavailable, then the Unit 3 train A diesel generator would be available as source 3. The Unit 3 diesel would then power both Unit 2 and Unit 3 train A loads.

It has been demonstrated that a single diesel generator is capable of simultaneously powering LOCA loads from one unit and safe shutdown loads from the second unit. Therefore, assuming the worst case single failure condition (i.e., loss of the Unit 3 train A diesel generator when the Unit 2 train A diesel generator is unavailable), all required loads would still be powered. That is, both Unit 2 and Unit 3 train B diesels would receive a start signal and would power their respective units' train B ESF loads.

Additionally, buses B04/B06 480 volt AC power is not required for operability of the tie breaker control circuitry. The tie breaker requires only 125 VDC power in order to operate. 125 VDC power operability is specified in Technical Specification 3/4.8.2. Battery 3D1/3D2 can be considered fully operable in accordance with its technical specification independent of the operability of bus B04/B06.

Safety Analysis

The proposed changes discussed above will be deemed to involve a significant hazards consideration if there is a positive finding in any of the following areas:

1. Will operation of the facility in accordance with these proposed changes involve a significant increase in the probability or consequences of any accident previously evaluated?

   Response: No

   In order to determine whether the proposed diesel generator cross-connect would increase the probability of occurrence of a previously evaluated accident or equipment malfunction, the proposed change was evaluated from the standpoint of whether it would decrease the ability of any structure, system, or component to prevent or mitigate the consequences of an accident or equipment malfunction. In order to accomplish the evaluation, a Failure Modes and Effects Analysis (FMEA) was performed. The results of the FMEA were compared with the previously performed FMEA for the emergency standby power system, as described in FSAR Table 8.3-8. The comparison evidenced no new failure modes and effects associated with implementation of the proposed diesel generator cross-connect which are not bounded by the existing FMEA for the emergency standby power system.

   Safety analyses and FMEAs contained in FSAR Chapters 6 and 15 were reviewed to determine which incidents relied on the emergency standby power system to prevent or mitigate the consequences of an accident. It should be noted that such reliance need not be a direct reliance on a diesel generator, but for example, might be a reliance on a HPSI pump for which power is supplied by the emergency standby power system. For the incidents described in FSAR Chapter 15, implementation of the proposed diesel generator cross-connect does not degrade or prevent actions described in the "Sequence of Event" tables, nor does implementation of the proposed diesel generator cross-connect bypass or cause to be bypassed any system design feature which would result in entry into an accident condition. This assessment is supported by the FMEA performed for the proposed design change. A review of FMEAs and design bases for engineered safety feature systems discussed in FSAR Chapter 6 did not identify any adverse impact on system operation or reliability as a result of the implementation of the proposed design change.

   A Standby Power Capacity Test has been conducted in order to verify that an emergency diesel generator could supply the "worst-case" accident loads of one train on one unit in addition to the "worst-case" shutdown loads for that train on the opposite unit. The test demonstrated that the total load for the first two hours

of such an event would remain below the two hour, 110 percent load rating of the diesel. Additionally, the diesel load would be reduced to the continuous rating (or below) within 2 hours after a dual-unit initiating transient due to the reduction in reactor decay heat and corresponding auxiliary feedwater flow.

The Technical Specification Limiting Condition for Operation specifies that each diesel generator have a separate fuel storage system containing a minimum volume of 47,000 gallons of fuel. A calculation was performed to conservatively calculate the fuel oil consumption of an emergency diesel generator for seven days of dual unit service. This service includes total loss of offsite power to both Units 2 and 3 and a loss of coolant accident (LOCA) in one unit. The calculation demonstrated that the worst case scenario resulted in a calculated minimum required fuel oil level less than the Technical Specification minimum of 47,000 gallons. Thus, the current fuel oil storage capacity and limits are adequate for shared unit service.

In addition to the review of safety analyses and FMEAs described in FSAR Chapters 15 and 16, the following major design, safety, regulatory, and analytical issues were considered in the safety evaluation to assure that the proposed diesel generator cross-connect does not adversely impact the conclusions reached regarding the potential for increased probability of occurrence of an accident or malfunction of equipment:

- Fire Protection
- Seismic II/I Considerations
- Equipment Qualification
- Security
- Pipe Break and Consequential Occurrances
- Radiological Consequences
- Single Failure Criterion
- Internally and Externally Generated Missiles
- Inservice Inspection Requirements
- Plant Communications Considerations
- Control Room/Containment Leakage
- Redundancy/Diversity
- Electrical Separation
- Isolation Requirements
- Human Factors
- Post Accident Access and Shielding
- Existing Licensing Commitments
- Toxic Gas Hazards
- Site Drainage/Flooding
- Compliance with 10 CFR 50, Appendix A, General Design Criteria

In summary, the probability of occurrence of an accident or malfunction of equipment important to safety previously evaluated in the FSAR will not be increased by implementation of the proposed diesel generator cross-connect.

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

   The proposed diesel generator cross-connect has been evaluated by performance of an FMEA. The most limiting failure mode identified in the FMEA results from the loss of one safety train in each unit. Due to the redundancy of the emergency standby power system and other engineered safety feature systems, one safety train would be available to prevent or mitigate the consequences of any accident. Since the plant is already analyzed for partial and total losses of power (whichever is the most limiting case, as defined in the FSAR), any power loss resulting from a failure of the proposed diesel generator cross-connect is bounded by existing safety analyses. Implementation of the proposed design change will not create the possibility of an accident or malfunction of equipment different than any previously evaluated in the SONGS Units 2 and 3 FSAR.

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

   Response: No

   Each of the bases associated with SONGS Units 2 and 3 Technical Specification 3/4.8 has been individually addressed below regarding the impact of implementation of the proposed diesel generator cross-connect.

   - The proposed diesel generator cross-connect does not impact the capability of AC and DC power sources and associated distribution systems to supply power to safety related systems required for safe shutdown, mitigation, and control of accident conditions. The minimum specified independent and redundant AC and DC power sources and distribution systems continue to satisfy the requirements of 10 CFR 50, Appendix A, General Design Criterion 17.

   - The operability of the emergency standby power system is consistent with the initial condition assumptions of the plant safety analyses. Implementation of the proposed design change will not result in a complete loss of safety function of critical systems during the period when one of the diesel generators is inoperable, assuming a loss of offsite power.

- The operability of AC and DC Power sources during shutdown and refueling has not been impacted. The plant can be maintained in the shutdown or refueling condition for extended periods of time, and sufficient instrumentation and control capability is available for monitoring and maintaining the status of each unit.

- The operability of the required independent circuits between the offsite transmission network and onsite Class 1E distribution system will continue to be verified. No changes will be made to these independent circuits as part of the proposed diesel generator cross-connect design change. Surveillance intervals remain unchanged.

- Although the actual surveillances will change, since the operability of additional components of the emergency standby power system will be verified once the proposed design change is implemented (i.e., the Unit 2 SIAS starting a Unit 3 diesel generator will be verified as will the operation of its associated transfer enable switch), the types of surveillances and frequency of these inspections will be consistent with the existing Technical Specification basis.

- The loading of the diesel generators during accident conditions may increase as a result of implementation of the proposed design change; however, the short-term and continuous loading of the diesel generators has been verified by test not to exceed the ratings established in the basis of the Technical Specification.

- The effectiveness and capability of the station batteries will not be impacted by implementation of the proposed design change.

- Limits established in the basis for the Technical Specification which ensure operability and capability of the station batteries will not be impacted by implementation of the proposed design change.

- Implementation of the proposed design change will not result in operation of a battery's cell parameters outside the normal limit, but within the allowable value specified in the Technical Specifications.

Based on the review of the bases of the Technical Specifications described above, implementation of the proposed diesel generator cross-connect will not result in a reduction in the margin of safety associated with the basis of any Technical Specification.

The Commission has provided guidance concerning the application of standards for determining whether a significant hazards consideration exists by providing certain examples (48 FR 14870) of amendments that are considered not likely to involve significant hazards considerations. Example (vi) relates to a change which either may result in some increase to the probability or consequences of a previously analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptance criteria with respect to the system or component specified in the Standard Review Plan: for example, a change resulting from the application of a refinement of a previously used calculational model or design method. This change does not make changes in analytical methods or results of analyses previously found to be acceptable by the NRC and used to demonstrate conformance with the regulations and is therefore acceptable.

Safety and Significant Hazards Determination

Based on the above Safety Analysis, it is concluded that: (1) there is a reasonable assurance that the health and safety of the public will not be endangered by the proposed change; and (2) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.

BRD:5717F

ATTACHMENT A