ATTACHMENT A

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January 26, 1981

Mr. Frank J. Miraglia, Jr., Chief
Licensing Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Docket No. 50-275
Docket No. 50-323
Diablo Canyon Units 1 and 2

Subject: Full Power License Requirements

Dear Mr. Miraglia:

The attached information, as outlined in the Table of Contents, addresses issues which must be reviewed for full power operation of Diablo Canyon Units 1 and 2. The full power requirements which we have addressed are based on current NRC guidance and discussions with the Staff.

Advance copies of this submittal have been sent by courier to Mr. Bart Buckley.

Action Item II.F.2 from NUREG-0660 is composed in part of Westinghouse proprietary information and therefore will be presented as a separate submittal by February 6, 1981.

Please acknowledge receipt of the attached material on the enclosed copy of this letter and return it to me in the enclosed addressed envelope.

Very truly yours,

Philip A. Crane, Jr.

Attachment
CC w/attachment: Service List

ATTACHMENT

TABLE OF CONTENTS

II.E.3.1 RELIABILITY OF POWER SUPPLIES FOR NATURAL CIRCULATION

A. NRC POSITION

Consistent with satisfying the requirements of General Design Criteria 10, 14, 15, 17, and 20 of Appendix A to 10 CFR Part 50 for the event of loss of offsite power, the following positions shall be implemented:

(1) The pressurizer heater power supply design shall provide the capability to supply, from either the offsite power source or the emergency power source (when offsite power is not available), a predetermined number of pressurizer heaters and associated controls necessary to establish and maintain natural circulation at hot standby conditions. The required heaters and their controls shall be connected to the emergency buses in a manner that will provide redundant power supply capability.

(2) Procedures and training shall be established to make the operator aware of when and how the required pressurizer heaters shall be connected to the emergency buses. If required, the procedures shall identify under what conditions selected emergency loads can be shed from the emergency power source to provide sufficient capacity for the connection of the pressurizer heaters.

(3) The time required to accomplish the connection of the preselected pressurizer heater to the emergency buses shall be consistent with the timely initiation and maintenance of natural circulation conditions.

(4) Pressurizer heater motive and control power interfaces with the emergency buses shall be accomplished through devices that have been qualified in accordance with safety-grade requirements.

CLARIFICATION

(1) Redundant heater capacity must be provided, and each redundant heater or group of heaters should have access to only one Class 1E division power supply.

(2) The number of heaters required to have access to each emergency power source is that number required to maintain natural circulation in the hot standby condition.

(3) The power sources need not necessarily have the capacity to provide power to the heaters concurrently with the loads required for loss-of-coolant accident.

(4) Any changeover of the heaters from normal offsite power to emergency onsite power is to be accomplished manually in the control room.

(5) In establishing procedure to manually load the pressurizer heaters onto the emergency power sources, careful consideration must be given to:

(a) which ESF loads may be appropriately shed for a given situation;

(b) reset of the safety injection actuation signal to permit the operation of the heaters; and

(c) instrumentation and criteria for operator use to prevent overloading a diesel generator.

(6) The Class IE interfaces for main power and control power are to be protected by safety-grade circuit breakers (see also Regulatory Guide 1.75).

(7) Being non-Class IE loads, the pressurizer heaters must be automatically shed from the emergency power sources upon the occurrence of a safety injection actuation signal (see item 5.b. above).

B. IMPLEMENTATION

The applicant should submit documentation 4 months prior to the expected issuance of the staff safety evaluation report for an operating license or 4 months prior to the listed implementation date, whichever is later.

The applicant shall provide sufficient documentation to support a reasonable assurance finding by the NRC that each of the subparts of the position stated above are met. The documentation should include as a minimum, supporting information including system design description, logic diagrams, electrical schematics, test procedures, and technical specifications.

II.E.3.1 PGandE Response

Response to Staff Position 1

All of the four pressurizer heater groups can be supplied with power from offsite power sources when they are available. In addition, power can be provided to two out of four heater groups from the emergency power source through the Engineered Safety Features (ESF) buses when offsite power is not available (see Figure II.E.3.1-1). This arrangement is adequate for establishing and maintaining natural circulation during hot standby conditions. Redundancy is provided by supplying each of the two groups of heaters from a different ESF bus.

The requirements as stated by the NRC staff relating to minimum capacity and time duration of the emergency power supply for the pressurizer heaters are well within current heater and power source design. One bank of backup heaters will be available to each emergency power train within 60 minutes after loss of offsite power. Pressurizer heat loss calculations show a minimum heater requirement of 150 kW without offsite power. This minimum capacity is more than adequate to offset the heat lost from the pressurizer at or below normal operating pressure with no allowance for continuous spray. With continuous spray, loss of subcooling would occur in five to six hours. Ability to supply emergency power to the heaters within four hours following a loss of offsite power will prevent loss of subcooling in the primary loop.

All of the equipment associated with pressurizer heater supply described in this response are seismically qualified for the Hosgri event except for those devices specifically noted as non-safety grade (see Figure II.E.3.1-1).

Circuit breakers 52-G-72 and 52-1H-74 have been added to 480 volt ESF buses 1G and 1H, respectively (see Figure II.E 1-2). These breakers have been installed and are seismically qualified to meet safety-grade requirements. The seismic qualification is based on PGandE's testing experience on similar equipment which has previously demonstrated that electromechanical equipment can withstand numerous high seismic events without damage, and that the equipment will be available to perform its safety function when called upon after the seismic event.

The heater banks will be automatically tripped off of the ESF buses upon occurrence of a safety injection (SI) actuation signal.

Response to Staff Position 2

PGandE has developed procedures and implemented the training of the operators to make the operator aware of when and how the required pressurizer heaters should be connected to the emergency buses. Loading of each ESF bus can be accomplished from the main control board (see Staff Position 3 below). Procedures have been established to identify under what conditions selected loads can be shed from the ESF bus to prevent overloading when the pressurizer heaters are connected. The procedures include provisions to ensure that the heaters are transferred to the ESF power source as described in Response to Staff Position 3 below. The procedures also include provisions to reset the Safety Injection Actuation Signal to permit the operation of the heaters. The time required to transfer the power supplies is estimated to be less than 10 minutes and is expected to expose the operator to no more than 10 mRem.

The procedures have been written and approved and have been incorporated into the Operating Procedures of the Plant Manual. Most of the operators were trained on these procedures in October 1980. One group of operators remains to be trained on these procedures. They will be trained prior to full power operation.

Response to Staff Position 3

The design (see Figures II.E.3.1-3 and II.E.3.1-4) provides for simple and rapid transfer of the heater groups to the ESF power source. The procedure for transfer of the heater groups to the ESF power source is described briefly below.

When it is determined that the pressurizer heaters are required, the Shift Foreman needs only to dispatch an operator to the 100 foot elevation in the Auxiliary Building, which is just three floors directly below the main control room (two separate stairwells are available). Once in the area, the operator simply verifies that the source breakers (52-1H-74, 52-13D-6, 52-13E-2, 52-1G-72) are open (white "Power on" lights indicate if either source is energized), and manually throws the deenergized transfer switches. This action in itself will not connect the pressurizer heaters onto the ESF buses. Only when the Shift Foreman is informed that the transfers have been made, will the heaters again be controlled using the normal control devices provided on the main control console (see Figure II.E.3.1-1). Even with manual transfer, the heaters can be supplied with emergency power well within the one hour limit recommended by Westinghouse. PGandE will provide control room indication of actual wattage being supplied to each heater group that has been transferred to the emergency power sources. Diesel generator loading parameters are also displayed in the control room.