UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 82 TO FACILITY OPERATING LICENSE NO. NPF-10

AND AMENDMENT NO. 72 TO FACILITY OPERATING LICENSE NO. NPF-15

SOUTHERN CALIFORNIA EDISON COMPANY

SAN DIEGO GAS AND ELECTRIC COMPANY

THE CITY OF RIVERSIDE, CALIFORNIA

THE CITY OF ANAHEIM, CALIFORNIA

SAN ONOFRE NUCLEAR GENERATING STATION, UNIT NOS. 2 AND 3

DOCKET NOS. 50-361 AND 50-362

1.0 INTRODUCTION

By letters dated December 19, 1988 (PCN-267), December 30, 1988 (PCN-266), which were supplemented September 5, 1989, and April 7, 1989 (PCN-291), which was supplemented November 6, 1989, Southern California Edison Company et al. (the licensee) requested a change to the Technical Specifications for Facility Operating Licenses No. NPF-10 and No. NPF-15 that authorize operation of San Onofre Nuclear Generating Station, Unit Nos. 2 and 3 in San Diego County, California. In PCN-267, the licensee requested to revise TS 3/4.3.3.1, "Radiation Monitoring Instrumentation." In PCN-266, the licensee requested to revise TS 3/4.3.3.1, "Radiation Monitoring Instrumentation," and TS 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation." In PCN-291, the licensee requested to revise TS 3/4.4.10, "Reactor Coolant Gas Vent System."

These requested changes would extend the interval for 18 month surveillance tests in order to support the nominal 24 month fuel cycle. In each case, the surveillance test interval would be changed from 18 months to "refueling interval." The licensee has submitted proposed changes to cover all the 18 month surveillance tests which cannot be performed during plant operation. At the staff's request, the licensee agreed to amend these proposed TS modifications to define "refueling interval" as 24 months. By letter dated March 20, 1989, this particular request was made by the licensee. This definition has been included in the Frequency Notation Table of the Technical Specifications (Table 1.2) by Amendments 73 and 61 to Facility Operating License Nos. NPF-10 and NPF-15, respectively.

The November 6, 1989 supplement contained clarifying information which did not change the subject of the proposed amendment noticed in the Federal Register.

2.0 EVALUATION

2.1 PCN-266 and PCN-267

By letter dated December 30, 1988 and supplemented September 5, 1989, the licensee proposed in PCN-266 to revise TS 3/4.3.2, "Engineered Safety Feature Actuation Instrumentation," Table 4.3-2, Item 12.c; and TS 3/4.3.3.1, "Radiation Monitoring Instrumentation," Table 4.3-3, Item 1.b. Radiation monitoring instruments provide two trains of continuous monitoring, recording, and indication of containment area radiation (gamma) levels. These systems also provide alarm annunciation and containment purge isolation trip initiation signals whenever technical specification limits are approached or exceeded. TS 4.3.2.1, Table 4.3-2, Item 12.c and TS 4.3.3.1, Table 4.3-3, Item 1.b state that each containment purge isolation area monitor shall be demonstrated operable by the performance of a channel calibration at least once per 18 months. The proposed change would revise this interval from at least 18 months to at least once per refueling, which is defined as at least once every 24 months.

By letter dated December 19, 1988 and supplemented September 5, 1989, the licensee proposed in PCN-267 to revise TS 3/4.3.3.1, "Radiation Monitoring Instrumentation." This specification provides alarm and trip setpoints for certain radiation monitoring instrumentation channels. The operability of these radiation monitoring alarm channels ensures that: (1) the radiation levels are continuously measured in the areas served by the individual channels; (2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded; and (3) sufficient information is available on selected plant parameters to monitor and assess these variables following an accident. Radiation monitoring instruments provide two trains of high range continuous monitoring, recording, and indication of containment area radiation levels. The systems also provide for alarm annunciation whenever the technical specification limits for area radiation are approached or exceeded. During accident conditions, the high range containment monitors would provide for long-term post-accident monitoring of radiation conditions inside containment. TS 4.3.3.1 states that each containment high range channel shall be demonstrated operable by the performance of a channel calibration at least once per 18 months. The proposed change would revise this interval to at least once per refueling, which is defined as at least once every 24 months.

In both PCN-266 and PCN-267, the licensee has requested amendments to its licenses for San Onofre Unit Nos. 2 and 3 to revise its area and high range containment radiation instrument calibration interval from a nominal 18 months to each refueling interval. The revised refueling outage interval corresponds to the expected core life when utilizing higher enrichment and higher burnup fuel, which the staff has previously authorized for these units. The containment area monitors would alarm and actuate certain safety systems during an accident, whereas the containment

high range monitors would alarm only and indicate local dose rates. There are two redundant containment area and high range monitors (4 total) in each unit (8 total). The extension was requested to reduce the potential occupational radiation exposures which would occur if the full scope calibrations were conducted during plant operation.

The staff requested and has received an analysis of the past performance of these instruments from the licensee. They are checked visually daily and are functionally tested monthly. At the calibration interval, they are subjected to radiation fields to assess their performance capabilities for their intended function. Thus, a substantial data base exists regarding their performance and failure modes.

In response to staff questions, the licensee applied a Reliability Centered Maintenance (RCM) approach to analyze the surveillance and calibration data. This approach involved two reviews: (1) a surveillance review to assure that the existing daily and monthly surveillances are finding equipment problems, i.e., performance accuracy, hidden failures, or degraded conditions; and (2) a corrective maintenance history review to ensure that all problems affecting operability were detected by a condition or time directed means, i.e., surveillance, alarm or indication to the operator. The licensee provided data and analyses to support its conclusion that all problems that affect monitor operability were detected, or would have been detected, by the monthly channel functional test, alarms or indications to the operator. The staff reviewed this data with the licensee during a site visit in September 1989.

The staff agrees with the conclusion reached by the licensee, principally because the area monitors are amenable to test using an external pulsed light source. These monitors utilize thallium activated sodium iodide crystals as radiation detectors. Ionizing radiation causes light pulses in the crystals. By applying a light pulse, the complete monitor circuitry is checked monthly. Experience over many decades shows that such detectors are highly reliable and stable over many years of use. Degradation of these detectors normally occurs in the photomultiplier, cables or power supplies, i.e., conditions readily detected, as illustrated by the licensee's data provided to the staff.

The high range containment radiation monitors provide for long-term, post-accident monitoring of radiation levels in the containment. These monitors are ion chamber detectors, which are also robust. A high reading would provide an alarm in the control room, but these detectors do not perform a safety system actuation function. Information provided by these monitors is supplemented by portable instrument capabilities, effluent radiation monitors, and other containment monitoring capabilities of the licensee.

Therefore, based upon the review of the information provided by the licensee, the staff concludes that the licensee's request for an extension of its area and high range containment monitor calibration interval from a nominal 18 months to once per refueling (at least once every 24 months) is acceptable.

2.2 PCN-291

By letter dated April 7, 1989 and supplemented November 6, 1989, the licensee proposed in PCN-291 to revise TS 3/4.4.10, "Reactor Coolant Gas Vent System." This specification requires operability of the reactor coolant gas vent system in modes 1, 2, 3, and 4, which ensures that non-condensible gases which could inhibit natural circulation core cooling can be exhausted from the primary system following a design basis event. The design redundancy of the reactor gas coolant vent system serves to minimize the probability of an inadvertent or irreversible actuation while ensuring that a single failure of a vent valve or control system does not prevent isolation of the vent path. This specification also provides actions to be taken should the operability requirements not be met as well as surveillance requirements to periodically demonstrate system operability. TS 4.4.10 requires that each reactor coolant system vent path be demonstrated operable at least once per 18 months. The proposed change would revise the frequency of this surveillance to at least once per refueling interval, which is at least once every 24 months as defined in TS Table 1.2, "Frequency Notation."

The change from the 18 month surveillance interval to once per refueling interval is to achieve consistency with other technical specification modifications proposed by the licensee as part of its extended fuel cycle operations. The licensee states that the proposed change is required since the current 18 month surveillance interval would necessitate a plant shutdown solely to perform portions of the surveillance. Moreover, the portion of the surveillance which could be performed with the unit at power would result in high man-rem occupational radiation exposure.

The licensee states that there is no safety significance to extending the surveillance interval for the reactor coolant gas vent system valves. First, since the valves are maintained closed and not operated during normal operation, extending the surveillance interval will not increase the service requirements of the valve between surveillances. Second, no credit is taken for these valves in the accident analysis. Even if one of these valves was to become inoperable during plant operation, the TS action is to isolate the vent path. Thus, extending the surveillance interval does not affect this action.

Additionally, the licensee states that since the proposed change would increase the surveillance interval from 18 months to a refueling interval, the actual time interval between surveillances will be a function of the plant capacity factor for that particular fuel cycle. The equilibrium fuel cycle length will be approximately 513 effective full power days. Assuming a production factor of 90% and a 75 day refueling outage, the actual cycle length and the surveillance interval should be approximately 21 months. Currently TS 4.0.2 allows a 25% extension of the surveillance intervals. This extension would accommodate uninterrupted operation for the equilibrium cycle length. However, the TS 4.0.2 limitation on the application of the 25% extension (such that 3 consecutive intervals do not

exceed 3.25 times the nominal interval) eventually would impact operation. Thus, the proposed change does not represent a radical increase over what is already permitted by the TS.

The staff has reviewed the licensee's submittals. The staff concurs that it is prudent to avoid an unnecessary plant shutdown and to avoid unnecessary occupational radiation exposure for surveillance performance. Moreover, the staff agrees with the licensee's conclusion that there is no safety significance to extending the surveillance interval for the reactor coolant gas vent system valves. The staff agrees that the proposed extension is not a significant increase over what is allowed in the present TS. Finally, the proposed modification to the TS is consistent with other TS changes proposed by the licensee as part of its extended fuel cycle. Therefore, based upon review of the information provided by the licensee, the staff concludes that the licensee's request for an extension of the reactor coolant gas vent system surveillance interval from a nominal 18 months to once per refueling (at least once every 24 months) is acceptable.

3.0 CONTACT WITH STATE OFFICIAL

The staff has advised the State Department of Health Services, State of California, of the proposed determination of no significant hazards consideration. No comments were received.

4.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment and finding of no significant impact have been prepared and published (54 FR 50667) in the Federal Register on December 8, 1989. Accordingly, based upon the environmental assessment, the Commission has determined that the issuance of this amendment will not have a significant effect on the quality of the human environment.

5.0 CONCLUSION

We have concluded, based on the considerations discussed above that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; (2) such activities will be conducted in compliance with the Commission's regulations; and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Dated: January 2, 1990