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MIRAGLIA,F. Licensing Branch 3

SUBJECT: Forwards responses to 820115 request for addl info re Questions 1,3 & 4 on heated junction thermocouple reactor vessel level measurement sys.Response to Question 2 will be submitted by 820331.

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K. P. BASKIN
MANAGER OF NUCLEAR ENGINEERING,
SAFETY, AND LICENSING

TELEPHONE
(213) 572-1401

March 10, 1982

Director, Office of Nuclear Reactor Regulation
Attention: Mr. Frank Miraglia, Branch Chief
Licensing Branch No. 3
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 NRC's letter of January 15, 1982 forwarded four (4) questions which requested additional information relative to the Heated Junction Thermocouple (HJTC) reactor vessel level measurement system for San Onofre Units 2 and 3. Consistent with that request enclosed please find seven (7) copies of responses to questions 1, 3 and 4 (NRC Mail Code B026). The response for question 2 will be provided by March 31, 1982.

If you have any questions or comments concering the enclosed responses, please contact me.

Very truly yours,

K P Baskin

Enclosures

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ENCLOSURE

QUESTION 1

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RESPONSE

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QUESTION 2

Discuss the axial spacing chosen for the HJTC sensors for Units 2 and 3.

RESPONSE

The response to this question will be provided by March 31, 1982.

QUESTION 3

Has the number of core exit thermocouples to be used for determining the representative core exit temperature been determined yet? If so, how many will be used?

RESPONSE

San Onofre Units 2&3 each are equipped with 56 core exit thermocouples (CETs). The CETs are arranged so that 14 CETs are distributed as uniformly as possible in each of the four core quadrants.

Each of the two Qualified Safety Parameter Display System (QSPDS) channels receives input from 28 CETs. The input of all valid CETs to each of the QSPDS channels will be used to determine the representative core exit temperature.

An evaluation is being conducted to determine the minimum number of valid CETs necessary for ICC detection. The evaluation is intended to determine the reduced complement of CETs that will adequately detect initial core uncovery and trend the ensuing core heatup. The evaluations account for core nonuniformities including in-core effects of the radial decay power distribution and ex-core effects of condensate runback in the hot legs and nonuniform inlet temperatures. Currently it is estimated that adequate ICC detection will be assured with two valid CETs per quadrant. Therefore, the full core complement of CETs to be installed in San Onofre Units 2 and 3 are considered to be more than adequate for use in ICC detection, and provide an additional degree of operational flexibility.

QUESTION 4

What setpoint values are to be used for the setpoints for the difference between the temperatures of the heated and unheated junctions in the HJTC system?

RESPONSE

The exact value for the differential temperature (ΔT) and the unheated junction temperatures (T_R) level setpoints will be based on test results (including Phase III testing) and a setpoint calculation. The ΔT setpoint is expected to be within 150°F - 250°F. The unheated junction (T_R) setpoint will be between the saturation temperature at the safety valve lift pressure and a value based on the critical point temperature (670°F - 705°F). The ΔT setpoint is selected to ensure covered and uncovered conditions can be distinguished from each other unambiguously. The T_R setpoint is used to ensure a continued indication of sensor uncovery in high temperature environments when the applied heated junction heater power is cut back to prevent overheating the HJTC.

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