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SUBJECT: Forwards addl info in response to NRC 820115 request re heated junction thermocouple reactor vessel level measurement sys.Info responds to Question 2 re axial spacing.

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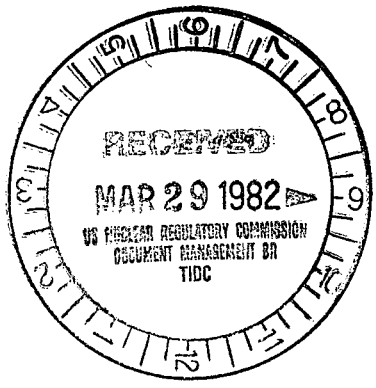
March 25, 1982



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. SCE's letter of March 10, 1980 provided responses to question 1, 3 and 4 and also indicated that the response to question 2 would be provided by March 31, 1982. Consistent with that commitment, enclosed please find seven (7) copies of response to question 2 (NRC Mail Code B026).

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

Very truly yours,

K P Baskin

Enclosures

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ENCLOSURE

HJTC Reactor Vessel Level Measurement System
San Onofre Units 2 and 3

QUESTION 2

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

RESPONSE

The HJTC System measures the collapsed water level in the reactor vessel above the Fuel Alignment Plate (FAP). The volume above the FAP in the San Onofre Units 2 and 3 reactor vessels can be pictured as being two separate regions (Figure 1). The region between the FAP and Upper Guide Structure Support Plate (UGSSP) is the upper plenum. The second region, between the UGSSP and the top of the vessel head, is the upper head. The HJTC probe assembly is located outside of a CEA shroud and extends through both these regions.

The HJTC probe assembly for San Onofre Units 2 and 3 is designed to measure the collapsed water level in the upper head independently from the collapsed water level in the upper plenum. This is accomplished by the use of a "split" probe assembly (Figure 2). Functionally, the probe is divided into an upper separator tube in the upper head region and a lower separator tube in the upper plenum region. A divider disk inside the probe located at the UGSSP elevation isolates the upper and lower tubes hydraulically. Holes at the top and bottom of each separator tube allow the collapsed water level in each region to be formed and measured inside the separator tubes.

Therefore, the HJTC sensors are located axially in the probe assembly so that the collapsed water level in each region can be measured. The location of the eight sensors available in each of two probe assemblies are shown in Figure 2. Sensors are placed as high as possible in the upper head and upper plenum to provide an early indication of voiding in each region. A sensor just above the UGSSP indicates when the upper head is completely empty. A sensor placed midway between the upper and lower sensors in the upper head provides increased resolution for the level measurement in the upper head. In the lower separator tube, sensors are placed at the top, centerline, and bottom of the hot leg. These sensors tell the operator when the collapsed water level passes through the hot leg elevation. The final sensor is placed as close as possible to the FAP. This sensor provides an indication that the water inventory above the core in the upper plenum has been depleted and thus, gives an advanced warning of the impending core uncovery.

FIGURE 1

SAN ONOFRE 2&3 REACTOR VESSEL

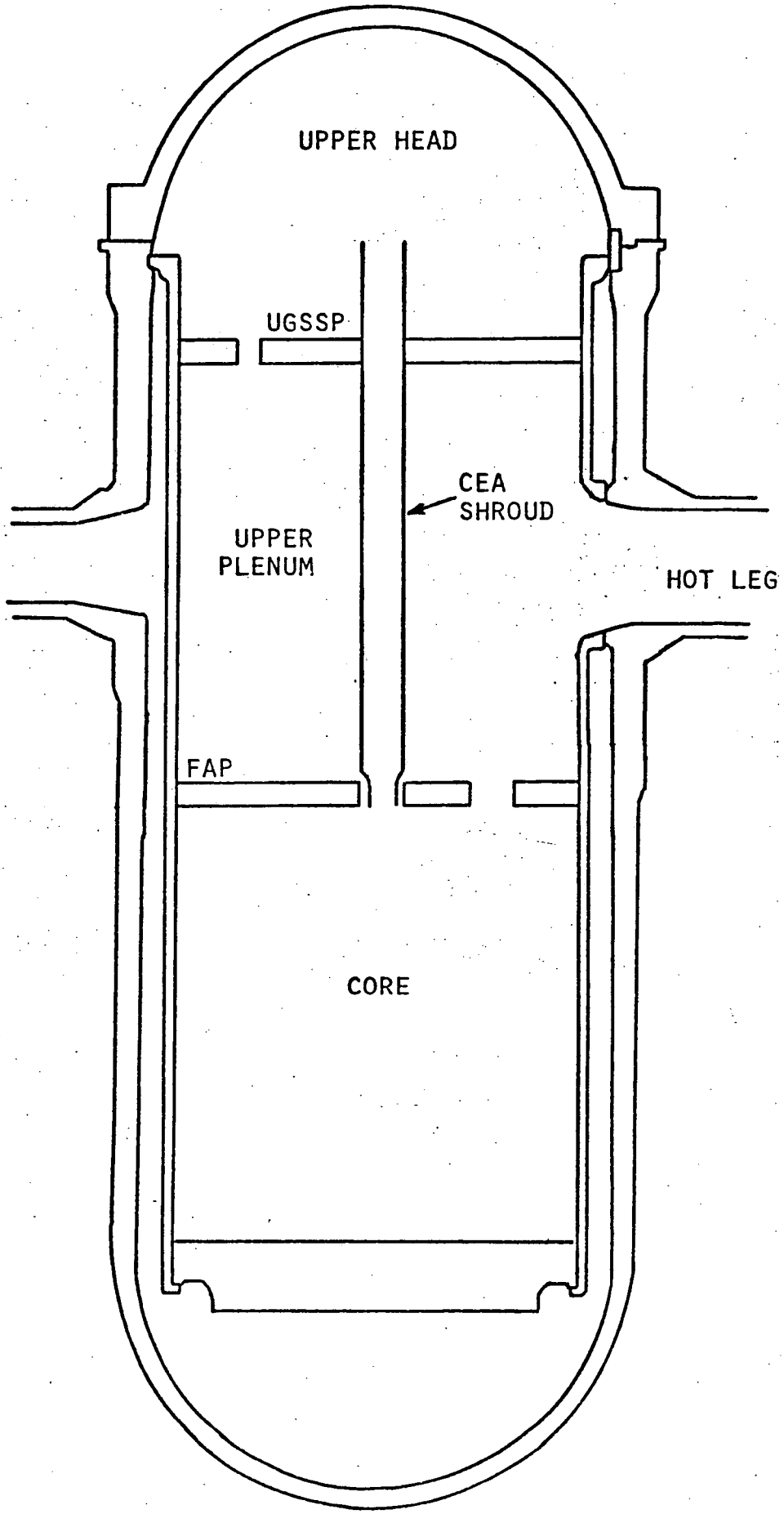

FIGURE 2

SAN ONOFRE 2&3 HJTC SENSOR LOCATIONS