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June 11, 1991

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Generic Letter 88-17, "Loss of Decay Heat Removal"
(TAC Nos. 69730 and 69731)

Gentlemen:

In our June 30, 1989 response to Generic Letter 88-17, we described our modification plan for Reactor Coolant System (RCS) level monitoring instrumentation. We also described our actions to assess the effectiveness of Shutdown Cooling (SDC) System instrumentation, and committed to provide an additional response following SDC system testing.

These tests have been completed. The purpose of this letter is to provide you with information on our planned modifications to improve SDC system instrumentation. This information is contained in Enclosure (1). The enclosure also describes our revised plans regarding narrow-range RCS level monitoring. An ultrasonic level transmitter, in lieu of a continuous level probe, will be installed on a RCS hot-leg. All modifications will be completed by the end of the upcoming refueling outages for Unit 1 (spring 1992) and Unit 2 (spring 1993) [Refueling Outage Nos. 10 and 9, respectively].

Should you have any further questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,

GCC/GT/bjd/dlm

Enclosure

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ENCLOSURE (1)

**CALVERT CLIFFS NUCLEAR POWER PLANT
FOLLOW-UP RESPONSE TO GENERIC LETTER 88-17**

In our June 30, 1989 response to Generic Letter 88-17, we described planned modifications to our Reactor Coolant System (RCS) level monitoring instrumentation [Reference (a)]. We also described our actions to assess the effectiveness of Shutdown Cooling (SDC) system instrumentation, and committed to provide an additional response following SDC system testing. The following describes planned modifications to improve SDC system instrumentation, and revised plans for the narrow-range RCS level instrument.

SDC INSTRUMENTATION:

Shutdown Cooling system tests were performed during the recent Unit 2 refueling outage. The test objectives were to:

- ♦ Evaluate Low Pressure Safety Injection (LPSI) pump performance at reduced RCS inventory, and
- ♦ Determine the best parameters for monitoring SDC system performance.

Test instrumentation was used to monitor LPSI pump flow, suction and discharge pressure, motor current, vibration, and suction piping acoustics. Each pump was tested at various RCS levels from the top of the hot-leg down to 15 inches from the bottom of the hot-leg. At each level, flow was incrementally increased from 500 gpm to 4000 gpm.

The test verified that our existing procedure controls for RCS level and SDC system flow are adequate to avoid system conditions leading to loss of SDC due to vortexing. However, some evidence of air entrainment was experienced at the Technical Specification required flow rate of 3000 gpm at mid-loop. Therefore, following approval of our License Amendment request regarding SDC minimum flow requirements (Reference b), sufficient margin will be available to prevent air ingestion. This is consistent with Generic Letter 88-17, Section 3.5.2 of Enclosure 2.

Based on evaluation of the test data, the following approaches will be employed to monitor SDC system performance and detect the onset of vortexing during reduced reactor coolant level conditions:

1. RCS level and SDC system flow will be monitored. Alarms for both the allowed limits of level and flow will be installed;
2. LPSI pump suction pressure will be monitored, trended, and alarmed; and
3. Existing Control Room LPSI pump motor current indication will be available to the operator.

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ENCLOSURE (1)

**CALVERT CLIFFS NUCLEAR POWER PLANT
FOLLOW-UP RESPONSE TO GENERIC LETTER 88-17**

The following modifications will be made during the upcoming refueling outages for Units 1 and 2:

1. a. New RCS wide- and narrow-range level instruments and alarms will be added (discussed below).
- b. Alarm capability will be added to the existing Control Room SDC flow indication.
2. Control Room LPSI pump suction pressure indication and trend capability will be added. Currently, only LPSI pump suction pressure alarms exist in the Control Room.

RCS LEVEL INSTRUMENTATION:

In our June 30, 1989 letter, we described the planned narrow- and wide-range RCS level instrumentation modifications. In lieu of a narrow-range continuous level probe, we will install an ultrasonic level transmitter. For convenience, the following describes both the narrow- and wide-range RCS level modifications:

- ♦ A wide-range level instrument will be installed on the same hot-leg tap as our refueling level indicator. The instrument will consist of a stilling well with heated and unheated continuous Resistance Temperature Detector (RTD) probes (see Figure 1). The measurement range will be from the bottom of the hot-leg to the Reactor Vessel flange. The detector will be referenced to Reactor Vessel Head pressure. A gauge glass will be installed in parallel with the stilling well to provide local indication.
- ♦ A narrow-range ultrasonic level measurement system will be installed on the bottom of a RCS hot-leg. The range of level indication will be from the top of the hot-leg to approximately four inches above the bottom of the hot-leg. This diverse and independent¹ method of monitoring RCS level, as well as the improved accuracy obtained at this critical level where vortexing can occur, more than compensate for the limited range of indication.

Both level detectors will have operator adjustable alarms and at least one will have trend capability.

- REFERENCES:
- (a) Letter from Mr. G. C. Creel (BG&E) to Document Control Desk (NRC), Response to Generic Letter 88-17, "Loss of Decay Heat Removal," dated June 30, 1989
 - (b) Letter from Mr. G. C. Creel (BG&E) to Document Control Desk (NRC), Request for Amendment to Operating Licenses, dated November 5, 1990

¹ Consistent with the guidance provided in NRC Generic Letter 88-17 for instrument independence.

RCS Mid-Loop Level Instrumentation Preliminary Concept Schematic

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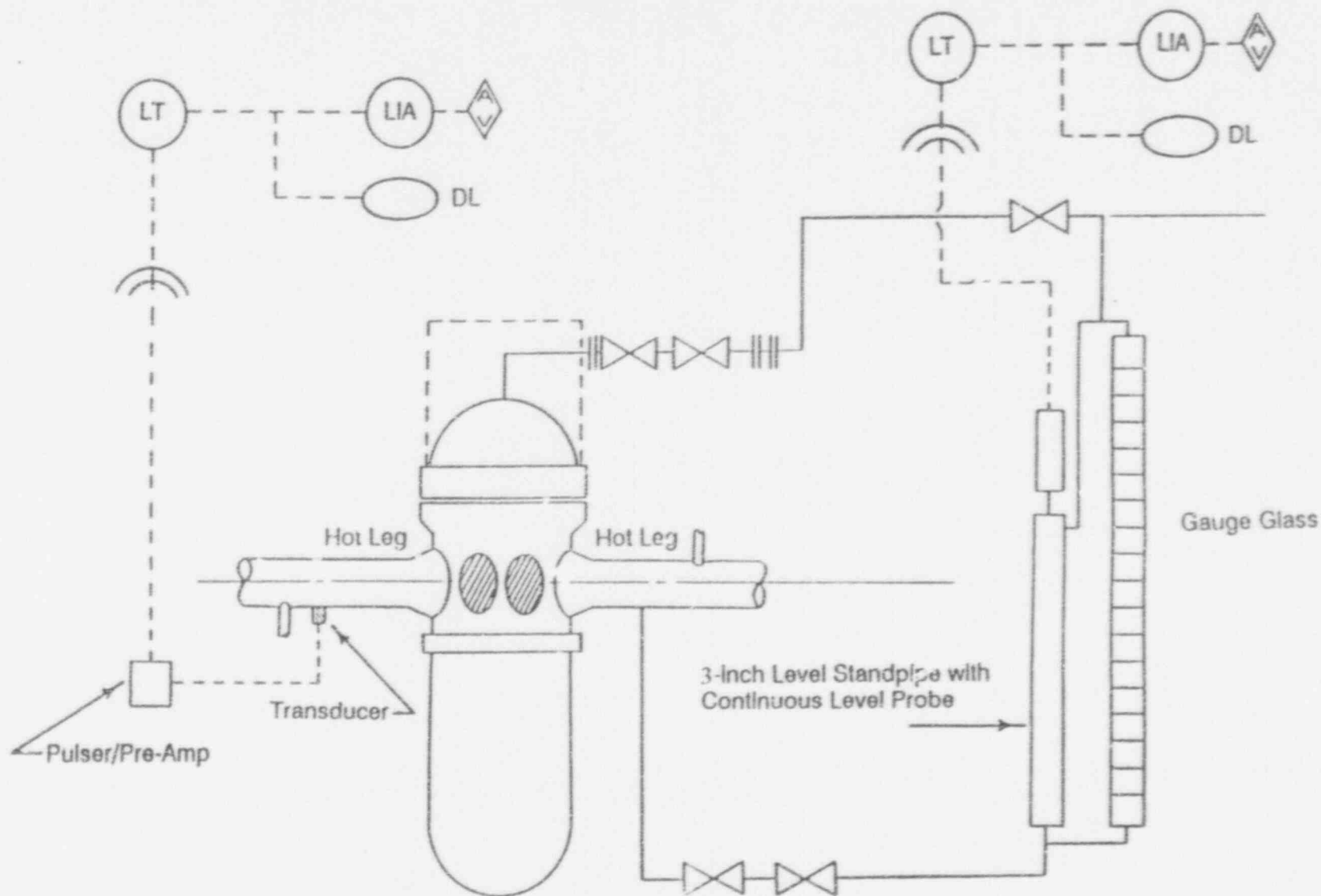


FIGURE 1