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ELECTRIC ENGINEERING
DEPARTMENT

September 20, 1982

Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attn: Mr. David H. Jaffe, Project Manager
Operating Reactors Branch #3
Division of Licensing

Subject: Calvert Cliffs Nuclear Power Plant
Units Nos. 1 & 2; Dockets Nos. 50-317 & 50-318
Request for Information

Reference: (a) Letter from R. A. Clark to A. E. Lundvall, Jr. dated 6/21/82; AFW Automatic Initiation Tech Spec.

Gentlemen:

On August 6, 1982, a telephone conference was conducted between Mr. Jaffe of your staff and our Messrs. Holston and Wenger to discuss the Auxiliary Feedwater (AFW) system modifications as evaluated in Reference (a). The purpose of this letter is to document and clarify those discussions. In addition, this letter takes the place of the 60-day response requested by Reference (a).

First, we point out that the final design and analyses of the AFW modifications are nearly complete and that construction on those portions whose design is complete began this past Spring (Unit 1), and will continue through the Fall 1982 (Unit 2) outage. We are reasonably confident that all equipment installation will be complete prior to the end of the Fall 1982 outage. If, however, the rather extensive installation and testing work cannot be completed without unduly extending the outage, we intend to defer placing the modified portion of the Unit 2 system into operation until the next scheduled Unit 2 refueling outage, which would occur in the Spring of 1984. We are preparing the necessary technical specifications and supporting analyses to enable us to pursue either option and to provide your staff with the information necessary to process the forthcoming Unit 2 (refueling) License Amendment Request promptly for either option.

Second, it should be noted that the modifications discussed in this letter are associated with the automatic initiation requirement for the AFW system, as opposed to the third train modifications, although the addition of the third pump (motor-driven) train for Unit 2 will be accomplished this outage. The similar modification for Unit 1 is scheduled for the next Unit 1 refueling outage (1983).

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The three specific topics discussed in the 8/6/82 telephone conversation are summarized and clarified below:

1. The design for the Steam Generator Rupture Signal (SGRS) has been changed to actuate isolation based only on a differential pressure signal. Prior to this change, the design required the SGRS for the ruptured steam generator (SG) to have both a low level signal and a lower pressure than the other SG in order to actuate isolation. Because the SGRS is used to isolate the AFW to the steam generators during a Main Steam Line Break, it is important that it actuate as soon as possible. By eliminating the low level portion of the signal and isolating on high differential pressure only, steam generator isolation is achieved more rapidly and with little impact on plant availability. This design scheme also considerably increases the safety margin for the main steam line break analysis.

   The details of the SGRS actuation scheme for each Calvert Cliffs Unit are as follows: Both steam generators have four channels of pressure instrumentation. Each of the four channels is compared to the corresponding channel on the opposite SG. When any two of the four channel comparison circuits sense a high differential pressure, a SGRS is generated in both channels (A&B) of the Auxiliary Feedwater Actuation System (AFAS). Each SG is fed by two AFW lines. One of these lines is supplied by the steam turbine-driven pump and the other line by the electric motor-driven pump. In each of the AFW supply lines there are two blocking valves located in series. A discrimination circuit in the Auxiliary Feedwater Actuation System (AFAS) block logic allows the SGRS to be sent only to the blocking valves in the lines feeding the ruptured SG, thereby not interrupting AFW flow to the unaffected SG. Two valves were installed in series to satisfy the single failure criterion. One valve receives its signal via AFAS channel "A" and the other via AFAS channel "B". Once the high differential pressure condition clears the blocking valves automatically reopen. A manual override capability is provided on these valves. Please note that the above description modifies that contained in the Technical Evaluation Report (TER, page 7, para. 3) prepared by Franklin Research Center (FRC) and attached to the NRC Safety Evaluation forwarded by Reference (a).

2. The TER prepared by FRC is also incorrect in that it states that AFW flow is automatically terminated to a SG on detection of high level (page 7, para. 3). In fact, when a high SG level is sensed in any two of the four level detection channels in a SG (each SG having four channels), the high level condition is annunciated in the control room to alert the operator to an overfeed condition. This feature does not provide for automatic termination of AFW flow.

3. On page 6 of the TER, it is stated that the AFW flow regulating valves will nominally be set to 130 gpm each. As pointed out in the 8/6/82 telephone conference, this setpoint has been changed to 160 gpm with a tolerance of minus (-) 70 gpm and plus (+) 57 gpm. This new range is based on instrument error analyses for the instrumentation to be installed. The resulting low end of the range (90 gpm) and high end of the range (217 gpm) will provide the operational flexibility necessary to meet the regulatory design criteria for response to main steam line breaks and main feedwater transients (including breaks), respectively. In addition, the range allows adequate time for operator action in the event of an overcooling or undercooling transient.

We trust that the above information clarifies any misunderstanding concerning the design and operation of the modified AFW system. If you require additional clarification or information, please contact us.

Very truly yours,

R. F. Ash
Supervising Engineer WCH

RFA/WCH/smn

cc: J. A. Biddison, Esquire
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