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February 22, 1980

1-020-17

Director of Nuclear Reactor Regulation
ATTN: Mr. R. W. Reid, Chief
Operating Reactors Branch #4
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Reactor Building Purge System
(File: 1510)

Gentlemen:

In response to your request of January 3, 1980, the following is provided.

1. ECCS ACTUATION

The emergency core cooling actuation system is composed of three redundant analog subsytems and two redundant logic subsystems. Each analog subsystem contains two channels of information for initiating protective action when low RCS pressure or high reactor building pressure exceeds its assigned limit. The trip signals from the three analog subsystems are simultaneously applied to two identical digital subsystems whose functions are as follows:

a. Combine the trip signals from the analog subsystems and initiate a trip to the final action units when any two of the three analog subsystems call for a trip.

b. Provide a sealing feature in the event of an output trip signal until operator intervention cancels it. The operator can cancel or reset the trip only after the trip initiating conditions have disappeared from the system.

c. In the event of a loss of coolant accident allow the operator complete maneuverability by enabling him to inhibit or energize, individually, any of the final action units to meet the requirements of the immediate situation.

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d. Provide the operator with a reliable means of manually tripping a channel.

e. Provide for complete on-line testing of each component including the final action unit itself and not cause a false trip nor inhibit a valid trip during the test interval.

Each analog subsystem contains one bypass bistable which allows controlled bypassing of the trip bistable to prevent actuation of the high and low pressure injection, isolation, and cooling systems during a normal shutdown. These bypasses are automatically removed on plant startup at $\simeq$ 250 PSIG above the trip bistable setpoint.

2. SYSTEM MONITORING

The analog subsystems are housed in separate analog cabinets. Within each cabinet, each analog input is displayed on indicators. Lamps indicate the state of each bistable, contact buffer, and logic buffer. An indicating panel at the top of each cabinet is easily visible. Lamps on this panel give quick visual indication of the trip status of the analog channels contained in that cabinet. In addition, visual indication of cabinet fan and pressure trip bypass status is provided.

All odd channels' 2-out-of-3 logics and their associated unit control modules are located in the same actuation cabinet(s), and the even channels' 2-out-of-3 logics and their associated unit control modules are located in the same cabinet(s). Within each cabinet, lamps indicate the trip state of each 2-out-of-3 logic and each unit control module. Each of these cabinets has an indicating panel at the top, which is easily visible at all times. Lamps on this panel give quick visual indication of the trip status of each 2-out-of-3 logic input. Cabinet fan and actuation channel trip status is also indicated.

3. REACTOR BUILDING ISOLATION

Our response to IE Bulletin 79-05A (dated April 16, 1979) committed us to provide diverse actuation signals of high reactor building pressure and low RCS pressure for reactor building isolation. Both of these signals are derived from safety-grade equipment. Reactor building isolation on high radiation is not required and is not provided in our design. No modifications are necessary to this isolation signal due to the small numbers and low probability of events which might lead to high radiation prior to high reactor building pressure or low RCS pressure.

4. Our response of January 31, 1979, to your generic letter of November 28, 1978 (with regard to bypasses), is clarified as follows: "Our review of safety actuation signal circuitry has not revealed any manual override features on the system level which unintentionally disable additional safety actuation signal circuits."

FSAR Section 7.1.3.2 discusses a block action provided by the unit controller (UC). The UC is employed to couple the trip signal from the trip bus to the safeguards device (pump, valve, etc.) and, therefore, is available to return individual components to manual control following an ESAS. As a result of reviews performed to meet the requirements of IE Bulletins 79-05, 79-05A and 79-05B, we have ensured that sufficient physical features are provided to facilitate adequate administrative control and that the use of each individual component's manual override is indicated at the component level.

Very truly yours,

David C. Trimble

David C. Trimble
Manager, Licensing

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