Omaha Public Power District

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May 31, 1979

Director of Nuclear Reactor Regulation
ATTN: Mr. Robert W. Reid, Chief
Operating Reactors Branch No. 4
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Reference: Docket No. 50-285

Gentlemen:

Please find attached, responses to questions received from you via telecopy on May 18, 1979.

Sincerely,

T. E. Short
Assistant General Manager

TES/KJM/BJH:jmm

Attach.

cc: LeBoeuf, Lamb, Leiby & MacRae
1333 New Hampshire Avenue
Suite 1100
Washington, D. C. 20036

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NRC Questions Received May 18, 1979

Question 1:

Provide the total positive displacement charging pump capacity (maximum capacity/gpm per pump). How many charging pumps?

Response:

Number of charging pumps: 3
Maximum capacity per pump: 40 gpm

Question 2:

Describe all events that resulted in a complete loss of main feedwater over the last three years of operation. Include as a minimum the following information:

a. Date

b. Initiating event

c. Power level

d. Consequences (one paragraph description)

e. Safety significance of event

Each event which occurred during a startup need not be described separately.

Response:

The following events resulted in a complete loss of main feedwater during the last three years. Normal shutdown of the main feedwater system due to routine unit shutdown has not been included.

I. a. Date: February 21, 1976

b. Initiating event: Loss of 161 KV supply to house service buses followed by failure to fast transfer.

c. Power level: 71%

d. Consequences: See footnote (1)

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e. Safety significance of event: None

II. a. Date: August 22, 1977

b. Initiating event: Momentary loss of 161 KV supply to house service buses followed by failure to fast transfer.

c. Power level: 97%

d. Consequences: See footnote (1)

e. Safety significance of event: None

Footnote (1): In both cases, following loss of the main feedwater pumps, the auxiliary feedwater system actuated and functioned per design.

Question 3.a.:

For all lines penetrating containment that are automatically isolated in the event of an accident, identify the parameters that are associated with automatic containment isolation. Also, indicate the and/or logic associated with these parameters.

Response:

The Fort Calhoun Station Unit No. 1 reactor containment building is provided with an automatic isolation actuation system which operates containment penetration isolation valves (both to the open and to the closed position) to mitigate the consequences of an accident. The automatic systems are the Containment Isolation Actuation Signal (CIAS) and the Ventilation Isolation Actuation Signal (VIAS). It should be noted that VIAS is redundant to CIAS in that it also generates a valve closure signal for some isolation valves closed by CIAS; specifically, the containment purge and relief lines and containment sample lines to and from RM-050/051.

The CIAS is generated if either a Pressurizer Pressure Low Signal (PPLS which actuates at 1600 psia) or a Containment Pressure High Signal (CPHS which actuates at 5 psig) is generated by an accident condition in the primary system and/or containment building. The actual mechanism of isolation is designed to meet single failure criteria. The CIAS system consists of two redundant isolation channels (or trains) which are actuated by sensors, in a two out of four logic, monitoring the primary system and containment pressure. When the actuation logic is satisfied, a signal is then generated which actuates the PPLS or CPHS "86" lockout relay which mechanically seals in the accident signal. The accident signal in turn actuates the emergency core cooling system and CIAS via an "86" lockout relay which mechanically seals in the CIAS control function. In addition, the Fort Calhoun Station Engineered Safety Feature System is provided with an additional control relay whereby channel A controls may "reach across" and actuate channel B equipment and vice versa. This provides increased availability of safety equipment. The CIAS train separation is maintained at the line isolation valves; channel A will operate the A valve and channel B the B valve.

When the "86" CIAS relay is actuated, relays in CIAS panels AI-43A and AI-43B are de-energized, causing the isolation valves to assume their accident position.

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Question 3.b.:

For lines penetrating the containment that are used to transfer fluids to the waste handling system outside containment, describe the action (automatic or manual) that is required to initiate fluid transfer. If

fluid transfer occurs automatically, describe the provisions that have been made to ensure that any demand or fluid transfer will be overridden and that these lines will be automatically isolated in the event of an accident. Furthermore, describe the provisions which will assure that the lines will remain isolated, even after resetting of the engineered safety features actuation signal. Identify the lines involved.

Response:

At present two lines, the containment sump pumps' discharge to the radioactive waste disposal system and the reactor coolant drain tank pumps' discharge to the radioactive waste disposal system, are used to remove liquid waste from the reactor containment building.

Both sets of pumps, WD-3A and WD-3B (containment sump pumps), and WD-2A and WD-2B (reactor coolant drain pumps), are capable of automatic or manual operation. To initiate operation of the containment sump pumps, the containment isolation valves, HCV-506A and HCV-506B, must be manually opened via control switch. The pumps may then be operated manually or in automatic. In the automatic mode of operation, one of the pumps is selected as a lead pump, the other as a standby pump. On high level, the lead pump is started; if the level goes higher the second pump is started. Both pumps trip on low sump level in automatic or manual operation.

On initiation of the emergency core cooling system, both containment sump pump isolation valves will close and, in addition, the emergency core cooling system will trip both sump pumps as part of the 480 V load shed system. At such time when the accident signal lockout relays are reset, the containment isolation valves will remain in the closed position and must manually (via control switch) be repositioned. If in automatic, the pumps will restart if the level is high. However, as stated above, the containment isolation valves are closed.

WD-2A and WD-2B are similar in operation to the containment sump pumps. However, the pumps will act independently in automatic. No lead-standby system exists. To initiate flow, the containment isolation valves, HCV-500A and HCV-500B, must be manually, via control switch, opened and the pumps then operated manually or automatically on high tank level. On initiation of the emergency core cooling system (of which containment isolation is a part), the penetration isolation valves close and the pumps are tripped as part of the 480 volt load shed. On the resetting of the accident lockout relays the pumps, if in automatic, may start depending on tank level. However, the containment penetration isolation valves will remain closed until manual, via a control switch, repositioning.

Question 3.c.:

Identify the essential lines penetrating the containment; i.e., lines which do not have a post-accident safety function, yet are important to plant safety. These lines typically do not receive an automatic isolation signal or, if they do, their isolation is deferred until subsequent signals are received that confirm the existence of an accident condition. Describe and justify the isolation actuation provisions for these lines. (Exclude

lines associated with the engineered safety features and the lines which are normally closed during operating modes requiring containment integrity and remain closed following an accident.)

Response:

Fort Calhoun Station has only one penetration which, although not required for safe plant shutdown, enhances plant operation. This penetration is the instrument air supply to containment. This penetration and its associated isolation valve, PCV-1849, are so arranged that on containment isolation a circuit is enabled such that the air header remains supplied during the accident. However, on low header pressure the supply line is isolated. The isolation setpoint is above the maximum design basis accident, thus insuring no radioactive leakage.