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January 20, 1982

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Byron Station Units 1 and 2
Braidwood Station Units 1 and 2
Advance FSAR Information
NRC Docket Nos. 50-454/455/456/457

Dear Mr. Denton:

This is to provide advance copies of information which will be included in the Byron/Braidwood FSAR in the next amendment. Attachment A to this letter lists the information enclosed.

One (1) signed original and fifty-nine (59) copies of this letter are provided. Fifteen (15) copies of the enclosures are included for your review and approval.

Please address further questions to this office.

Very truly yours,

F. D. Lentine
for T. R. Tramm
Nuclear Licensing Administrator
Pressurized Water Reactors

Attachment

3129N

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Attachment A

List of Enclosed Information

I. FSAR Question Responses

Revised: 010.50
022.22
040.32
241.1
423.30

II. FSAR Text Changes

Startup Test: Table 14.2-62
TMI Action Item: II.E.4.2 (E.29)

lower than that required by Technical Specifications, or if after fuel movement has ceased, the nuclear monitoring channels indicate that the reactor is critical or continues to approach criticality. Concentrated boric acid from the boric acid tanks shall be added to the vessel through the emergency boration valve and the RCS charging pumps. Boration shall continue until the required shutdown status is achieved. Containment evacuation will be carried out in accordance with evacuation procedures.

Acceptance Criteria

The initial core loading is completed in accordance with Subsection 4.3.2.1.

E.29 CONTAINMENT ISOLATION DEPENDABILITY (II.E.4.2)

POSITION:

The containment isolation system on Byron/Braidwood, as shown in the functional diagrams, Figure 7.2-1 of the FSAR, is an automatic, redundant, safety grade system which has diverse parameters for actuation. In Table 6.2-58 of the FSAR a summary of containment isolation signal and essential and nonessential systems that provide a possible open path out of the primary containment through Class B penetraton are either automatically isolated by isolation signals, by check valves that would prevent flow out of the containment, by manual valves that are normally closed during reactor operation, or as in the case of instrument lines, by closed piping system. The individual control circuits are designed to prevent automatic loss of containment isolation due to resetting of the isolation signals.

The 48 inch purge valves will be maintained closed in all plant modes other than cold shutdown and refueling. The 8 inch purge valves will meet Branch Technical Position CSB6-4. Any qualification testing necessary to accomplish the recommentations in CSB6-6 will be completed prior to fuel load.

The only safety-related items which will be affected by turbine building flooding are the main steam isolation valves (MSIV's). With a loss of power, the MSIV's will fail as is.

The steamlines are automatically isolated on high containment pressure or low steamline pressure signals. If the event which damages the circulating water piping also causes a significant break in a main steamline, the resulting decrease in pressure will cause MSIV closure prior to MSIV inoperability.

In the event that the turbine system remains intact following a circulating water pipine failure, the turbine will be tripped and the turbine stop valves will isolate the steam system. Failure of the MSIV's will not have an adverse effect. The only lines which will not be automatically isolated on a turbine trip are the takeoffs to the gland sealing steam and steam jet air ejectors. The second stage moisture separator reheater steam supply isolation valves have a 2 minute delay in closing after a turbine trip. This feature however has no adverse effect as far as steaming the generators to an unacceptable level prior to closing the valves. The 4 inch gland steamline utilizes a motor-operated isolation valve which will be closed by the operator after a turbine trip. The line to the steam jet air ejectors contains a 2-inch manual isolation valve. Failure to close this valve will result in a blowdown from the main steamline of approximately 1000 lb/hr. One train of the auxiliary feedwater system is capable of supplying the steam jet air ejector and maintaining the plant in hot shutdown. Two trains of auxiliary feedwater are capable of supplying the steam jet air ejectors, gland sealing steam and maintaining the plant is hot shutdown in the event the motor-operated isolation valves for the gland sealing steam fails to close. There are no main steam or turbine valves associated with lines branching off the main steam header between the MSIV's and the turbine stop valves that are below grade except for the MSIV's. Valves in these lines are of a high quality as identified in the response to Question 040.143.

One fully severed circulating water pipe would provide sufficient flow into the turbine building to flood the MSIV's in about 10 minutes. This is not realistic because a guillotine break of this pipe would require an 8 foot lateral motion of the pipe. A large break in the circulating water system would quickly be evident to operating personnel and action would be taken to secure the main steam system. However, as discussed above, the only concern in this case is the possibility of gross failure of the main steam piping in conjunction with the circulating water pipe failure and this event results in MSIV closure prior to flooding. If the main steam system is intact, the MSIV's may fail open without impact on plant safety.

QUESTION 22.22

"The FSAR Table 6.2-1 identify for each secondary side rupture case the single failure assumed."

RESPONSE

The worst case failure assumed in each of the secondary side rupture cases of Table 6.2-1 is a failure of one MSIV to close and the loss of one containment spray train. This has been incorporated into the new results which were provided in Amendment 30.

In addition, the mass and energy releases given in Table 6.2-50 are based on the worst case failure. This case is a failure of one MSIV to close and the loss of one containment spray train. The feedwater and main steam isolation valve closure times associated with the mass and energy release data in Table 6.2-50 are given in Table 6.2-9.

In the case of a loss of one heat removal train (2 RCFC and 1 spray train) the peak containment pressure and temperature is 33 psig and 315 ° F respectively.

QUESTION 040.32

"Describe with the aid of drawings, the bulk hydrogen storage facility including its location and distribution system. Include the protective measures considered in the design to prevent fires and explosions during operations such as filling and purging the generator, as well as during normal operations."

RESPONSE

The bulk hydrogen storage facility is shown on Figure Q40.32-1 (2 sheets) for Byron, and Figure Q40.32-2 (2 sheets) for Braidwood. The only piping which has been routed to date is the bulk supply line from the storage area up to the turbine building which is buried and the piping between the generators which is embedded in the floor. The remainder of the piping will be field routed.

Provisions made to reduce the risk of fires and explosions are described in the fire protection report. In addition, the hydrogen storage facility and the generators are grounded. Purging operations are conducted according to established Commonwealth Edison procedures, requirements, and manufacturer recommendations. Figures Q40.32-3 and 11.3-1 (Sheet 3 indicate the current layout of the hydrogen system.

The only hydrogen piping in the auxiliary building is a 1 inch supply header to the volume control tanks. This line will be routed such that it is not in the vicinity of safe shutdown equipment.

Soil Liquefaction Groundwater Monitoring Program

A special groundwater monitoring program will be conducted at Byron to confirm that liquefaction will not occur in the soils beneath the buried essential service water makeup piping. Four wells (two in bedrock and two in soil) will be located to monitor the groundwater level in Area of Concern No. 11. The groundwater levels will be measured at monthly intervals for up to 5 years. The measurements will be taken at weekly intervals through the first spring of the monitoring program. At the completion of 2 years of monitoring, a report will be submitted which provides the level data and the rainfall records from the Rockford Airport. An evaluation of the need for continued monitoring will be made by comparison with the program rainfall data and the historical average rainfall rates.

If at any time during the monitoring program it appears that the groundwater is approaching the level which could cause soil liquefaction, the NRC will be notified and a special report will be submitted to justify the continued safe operation of the plant.

and recovery from natural circulation mode. Operators should be able to recognize when natural circulation has stabilized, and should be able to control saturation margin, RCS pressure, and heat removal rate without exceeding specified operating limits.

If these tests have been performed at a comparable prototype plant, they need be repeated only to the extent necessary to accomplish the above training objectives.

5.w. Containment penetration cooling system. On those penetrations where coolers are not used, provide a startup test description that will demonstrate that concrete temperatures surrounding not penetrations do not exceed design limits."

RESPONSE

Item 1.n.7 Fire protection testing is conducted concurrently with ventilation preoperational tests as delineated in Tables 14.2-35, 14.2-37, 14.2-38 and 14.2-39 for ventilation related components and equipment.

Other fire protection testing is conducted as follows:

a) Carbon Dioxide
b) Halon
c) Detection System
d) Charcoal Filter Deluge

CARBON DIOXIDE

Concentration tests for areas protected by carbon dioxide are performed by the vendor. System testing is performed with the carbon dioxide storage tanks isolated to prevent full discharge of carbon dioxide.

The system test will verify all interlocks associated with the system. Wires will be lifted and control power fuses will be pulled in local panels to verify local and control room trouble alarms. The system will be actuated automatically with detectors and manually with pushbuttons. Proper evacuation time delays, discharge time, local alarms and control room alarms will be verified.

HALON

Concentration tests for areas protected by halon are performed by the vendor. Freon is substituted for halon during these concentration tests. During system testing, the halon bottles are disconnected from the discharge solenoid to prevent discharge of the gas.

The system test will verify all interlocks associated with the system. Fuses will be pulled to verify control room trouble alarms. The system will be actuated automatically with detectors and manually with pushbuttons. Local alarms and control room alarms will be verified.

DETECTION SYSTEM

Actuation of each detector in the system will be performed during the test. Control room alarms will be verified. Each detector module will be disconnected and control room trouble alarms will be verified.

CHARCOAL FILTER DELUGE

The deluge system for the charcoal filters is a manual system. Isolation valves will be closed and control room trouble alarms will be verified. Discharge valves will be opened and control room alarms will be verified. Discharge line pressure switches will be actuated and control room fire alarms will be verified. Interlocks with ventilation fans will be tested in the ventilation test.

Item 4.t. The referenced letter (NS-EPR-2465), from E. F. Rake (W) to H. R. Denton, dated July 8, 1981 provides the reactor manufacturer's recommended program for natural circulation related testing. The program includes four tests, one of which is item 4.t.

The four recommended tests will be conducted during the Byron preoperational and startup test programs as modified to incorporate plant specific design features (viz the Byron design incorporates a diesel driven AF pump not a steam driven pump).

Item 5.w. Table 14.2-16 has been revised to include testing of concrete penetrations cooled by component cooling and testing of non-cooled penetrations.