ARKANSAS POWER & LIGHT COMPANY
POST OFFICE BOX 551 LITTLE ROCK, ARKANSAS 72203 (501) 371-4000

May 17, 1982

1CAN058207

Director of Nuclear Reactor Regulation
ATTN: Mr. J. F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

SUBJECT: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Reactor Vessel Overpressurization
(File: 1510)

Gentlemen:

In a February 23, 1982, letter (1CNA028207) from Mr. John Stolz to Mr. William Cavanaugh III you requested additional information on the ANO-1 overpressure protection system. Our responses are attached and are written in the same format as we received the request.

Very truly yours,

John R. Marshall

John R. Marshall
Manager, Licensing

JRM:LDY:sc

Attachment

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ADDITIONAL INFORMATION
CONCERNING
OVERPRESSURE PROTECTION
FOR
ARKANSAS NUCLEAR ONE, UNIT NO. 1
DOCKET NO. 50-313

Concern #1

The Branch Technical Position requires the Arkansas Nuclear One, Unit 1 (ANO-1) overpressure protection system (OPS) to prevent exceeding the applicable Technical Specifications and 10CFR50 Appendix G limits. In your analysis and system description, you use 550 psig as the low temperature PORV setpoint and as the value that RCS pressure is allowed to reach prior to any credited operator action.

a. Provide a copy of the current ANO-1 Appendix G curve.

b. Does the 550 psig setpoint provide adequate assurance that the Appendix G curve limits will not be exceeded for all temperatures below the minimum pressurization temperature?

Response #1

a. A copy of the current ANO-1 Appendix G heatup and cooldown curves is attached. These are what the present 550 psig setpoint is based upon.

b. From the attached curves it is shown that at any temperature above 120°F the maximum pressure allowed is above 550 psig. It is not credible for the reactor vessel to go below 120°F due to decay heat load input to the primary fluid.

Concern #2

The OPS is required to function assuming any single active component failure. ANO-1 overpressure protection system does not meet this criterion for the case of inadvertent actuation of the high pressure injection (HPI) system with the PORV failing closed. You discussed several procedural and administrative controls used to prevent this scenario from occurring and the Branch Technical Position allows for such cases, if reviewed and approved on an individual basis, and if adequate controls to prevent the event are included in the plant Technical Specifications.

a. Provide a copy of all Technical Specifications that deal with this subject, or propose appropriate ones.

b. List all procedural and administrative controls used during HPI system tests to prevent violating Appendix G limits.

c. Could the HPI isolation valves (CV-1219, CV-1220, CV-1227, and CV-1228) be manually opened locally? Would the control room operators have positive valve position indication in light of the proposal to remove power to the valve operators?

Response #2

a. Per a conference call on May 13, 1982, with Mr. Guy Vissing et. al of your staff we will submit proposed Technical Specifications by July 30, 1982. A previous submittal of proposed Technical Specifications made December 3, 1976 must be approved prior to approval of the additional changes to be made in our July 30, 1982, submittal. Draft Technical Specifications were submitted in 1978 and we expect that these will be very similar to our upcoming proposed changes.

b. This item will be addressed in our July 30, 1982, submittal.

c. The HPI isolation valves (CV-1219, CV-1220, CV-1227, and CV-1228) can be manually opened locally and if power is removed from the valve operators position indication will be lost. However, it should be noted that indications such as pressurizer level and HPI flow status would alert operators of manual opening of the HPI isolation valves.

Concern #3

Relative to the OPS testing, please respond to the following:

a. How is the PORV and its control circuitry functionally tested?

b. At what frequency are these tests performed?

c. How do you ensure that these valves actually open during testing?

Response #3

Items a, b and c will be addressed in the submittal of Technical Specifications planned for July 30, 1982.

Concern #4

In your May 16, 1978 submittal, you state that AP&L would install an alarm at ANO-1 that would alert the operators if RCS temperature dropped below 280°F and the PORV isolation valve (CV-1000) had not been opened or the key-operated switch had not been positioned to enable the lower PORV setpoint. You also indicated that an alarm would be added that would sound to alert the operators if any of the HPI valves (CV-1219, CV-1220, CV-1227, and CV-1228) circuit breakers had not been de-energized when the RCS temperature falls below a predetermined setpoint.

a. Have these two alarm circuits been installed as described? If not, explain any deviations from your proposal.

b. Do these alarms share power supplies with each other or the PORV control circuitry, where a single failure could disable more than one function?

c. How can the operators ensure that the HPI valves are in fact closed prior to racking out the breakers? Does the indication show the actual valve position or merely a circuit indication?

d. You indicate that the predetermined temperature is 280°F. If the minimum pressurization temperature (MPT) is higher than 280°F, please discuss the protection afforded the reactor coolant system between 280°F and the MPT.

Response #4

a. Yes, the two alarm circuits have been installed as described. Installation was completed during the 1978 ANO-1 refueling outage.

b. The two alarm circuit power supplies are independent of the PORV power supply and of each other. Therefore, a single failure of a power supply would not disable more than one function.

c. Operations would verify the HPI valve position from the control room indication. This indication is from a position or limit switch which is a positive indicator of valve position.

d. The minimum pressurization temperature (MPT) is 280°F. Therefore, there is no difference between MPF and the predetermined overpressure mitigation system (OMS) setpoint.

Concern #5

You take credit for operator action to mitigate a pressure transient for all anaylzed events when a failure-closed of the PORV is considered. No credit can be taken for operator action until 10 minutes after the operator is aware that a pressure transient is in progress. For the most severe event that you analyzed, what audible alarm will alert the operators that a pressure transient is occurring (alarms associated with the PORV cannot be used because it is assumed failed closed)? We require that acceptable technical specification changes or system modifications be proposed to increase your calculated operator time from 4.4 minutes to at least 10 minutes.

Response #5

This item will be addressed in the submittal of Technical Specifications planned for July 30, 1982.

Concern #6

What training has been conducted at ANO-1 to make the operating personnel aware of overpressure incidents at other facilities and possible overpressure situations at ANO-1? How do you ensure that an emphasis is placed on this problem during your licensing and retraining programs?

Response #6

This item will be addressed in the submittal of Technical Specifications planned for July 30, 1982.

Concern #7

Provide current P&IDs of the overpressure protection system.

Response #7

Per a conference call on May 13, 1982, with Mr. Guy Vissing et. al of your staff we agreed that a P&ID would not be helpful to depict the modifications which were electrical in nature. Therefore, the previous submittals are sufficient.

Concern #8

You state that when the PORV is out of service, the makeup tank level is to be lowered to limit the water that can be added to the RCS.

a. Where is this requirement stated in Unit 1 operating and control documentation?

b. Are there alternate sources of makeup water, on which HPI pumps could be lined-up to take suction which contain a larger inventory of water than the lowered makeup tank? If so, what controls are in place to control these alternate sources?

Response #8

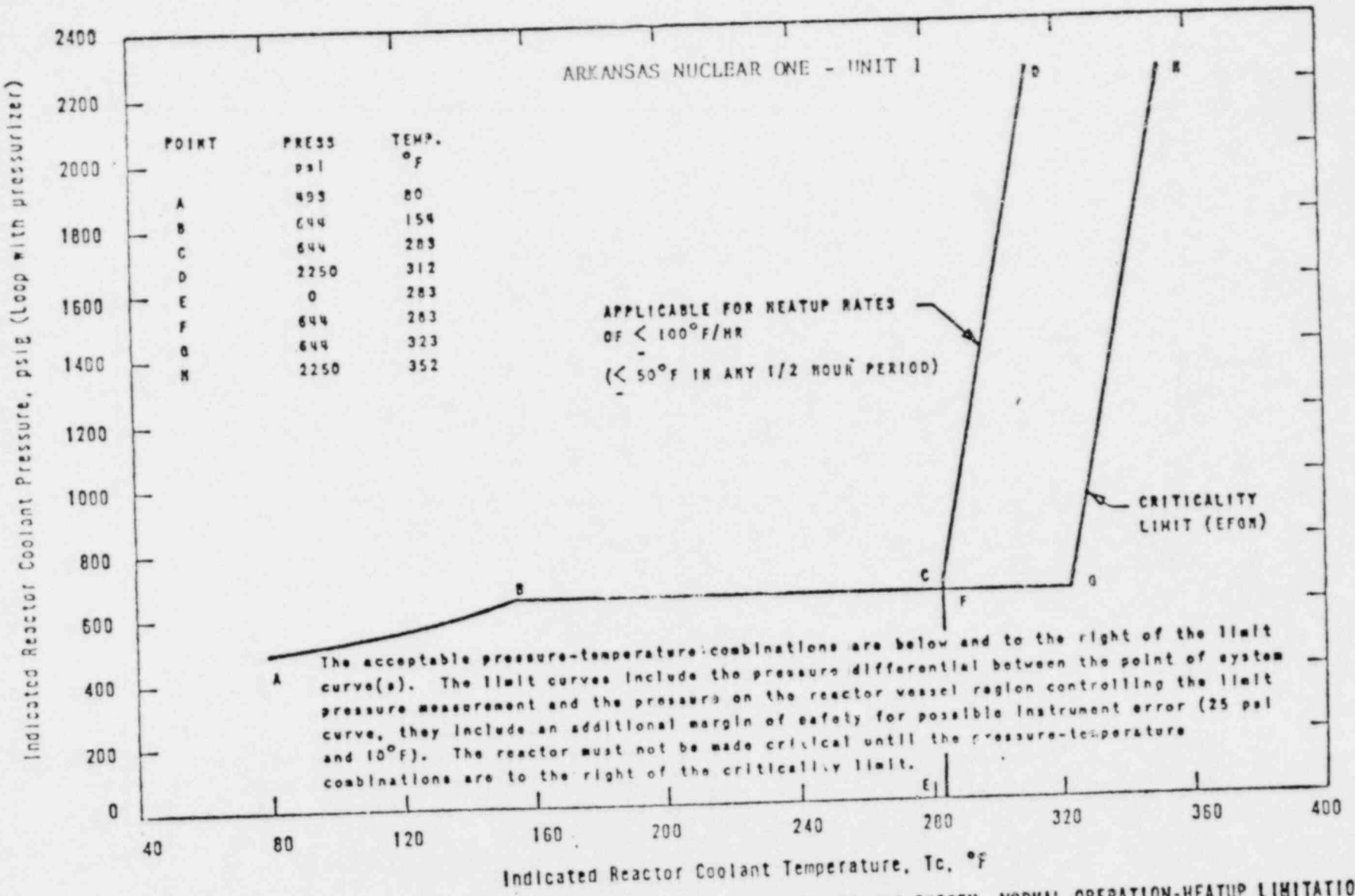
Items a) and b) will be addressed in the submittal of Technical Specifications planned for July 30, 1982.

Concern #9

Provide the age of the primary system, in effective full power years (EFPY), at which the current Appendix G limits are calculated.

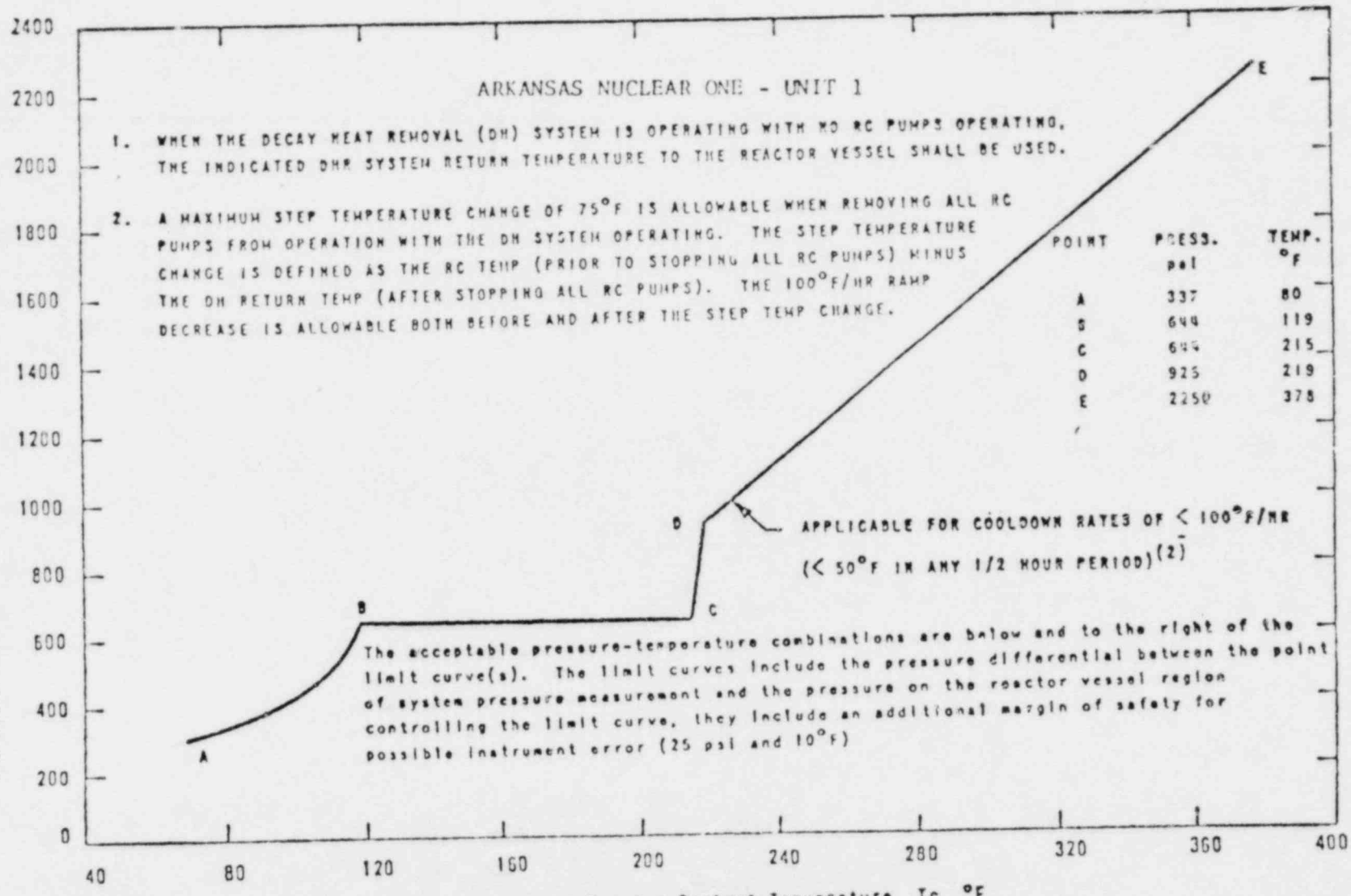
Response #9

The current Appendix G limits are for the first 5 EFPY. Therefore, they cover up to the sixth (6) EFPY.



REACTOR COOLANT SYSTEM, NORMAL OPERATION-HEATUP LIMITATIONS, APPLICABLE FOR FIRST 5.0 EFFECTIVE FULL POWER YEARS

Figure 3.1.2-2



REACTOR COOLANT SYSTEM, NORMAL OPERATION-COOLDOWN LIMITATIONS APPLICABLE FOR FIRST 5.0 EFFECTIVE FULL POWER YEARS

Figure 3.1.2-3