



AUG 18 1980

SAFETY EVALUATION FOR ISSUANCE OF AN EXCEPTION  
TO CERTAIN TECHNICAL SPECIFICATIONS RELATED  
TO THE CONDUCTING OF WATER HAMMER TESTS

1.0 INTRODUCTION AND EVALUATION

In a letter dated July 9, 1980, the Virginia Electric and Power Company requested certain exceptions to the Appendix A Technical Specifications. In their letter, the Virginia Electric and Power Company stated that in order to conduct the water hammer demonstration test, required in Technical Specification 8.1, certain exceptions to the Appendix A Technical Specifications are required.

2.0 DISCUSSION

Our Safety Evaluation Report for North Anna Units 1 and 2 addressed the matter of water hammer which has been experienced in pressurized water and boiling water reactors. Of the 100 incidents of water hammer which have occurred, the systems most frequently affected are the feedwater systems. To avoid water hammer events that are a result of steam bubble collapse following initiation of auxiliary feedwater flow, the Unit 1 and 2 steam generators have been modified by plugging the orifice holes on the bottom side of the sparger and installing J-tubes on the upper side. In Section 10.3 of the Safety Evaluation Report and Amendment No. 4 to Operating License NPF-4, "North Anna Power Station Unit 1", we concluded that the preoperational test program performed on North Anna Unit 1 was acceptable, and the feedwater system and steam generator design for North Anna Units 1 and 2 with respect to this potential water hammer concern is acceptable. We stated, however, that we would require Unit 2 to perform tests to show that water hammer will not occur in the feedwater system and the Technical Specifications were modified to reflect this requirement.

VEPCO by letter dated July 9, 1980, has stated that five exceptions to the Appendix A Technical Specifications would be required in order to allow the water hammer test to be performed on one steam generator.

The requested exceptions to Appendix A Technical Specifications to perform the water hammer test are discussed in the following paragraphs.

- a) TS 3.3.2.1 ESFAS Instrumentation, Differential Pressure Between Steam Lines

Defeating the differential pressure signal which is generated by differential pressure between the steam generator under test and either of the other two steam generators will not interfere with a differential pressure signal between the two steam generators operating in their normal mode. Further, all of the other ESFAS signals will be operable.

AUG 18 1980

We conclude that the proposed Technical Specification change is acceptable for the purpose of conducting the water hammer test.

- b) TS 3.3.2.1 ESFAS Instrumentation, Auxiliary Feedwater Pump Start Low-Low Steam Generator Level

Defeating the auxiliary feedwater pump start signal on low-low steam generator water level is necessary for conducting the water hammer test. If the signal is not defeated the pumps will be energized as the water level of the steam generator under test is lowered to the test start level.

We conclude that the proposed Technical Specification change is acceptable as the remaining pump start signals will be operable for the two steam generators operating in their normal mode.

- c) TS 3.5.2 ECCS Requires  $T_{avg} \geq 350^{\circ}F$

The differential pressure signal for the steam generator under test is blocked in TS 3.3.2.1(a) above. This same signal input is utilized in combination with  $T_{avg}$  for actuating the safety injection system. Therefore, the differential pressure, being blocked, is not available to fulfill the requirement of TS 3.5.2 .

We conclude that the proposed Technical Specification change is acceptable as all of the other ECCS actuation signals are still available.

- d) TS 3.7.1.2 Auxiliary Feedwater System

The feedwater system pump actuation signal on low-low water level in the steam generator under test is defeated in TS 3.3.2.1(b) above will also result in TS 3.7.1.2 not being met.

As stated for TS 3.3.2.1(b) above the remaining pump start signals will be operable for the two steam generators operating in their normal mode. We, therefore, concur that the proposed Technical Specification change is acceptable.

- e) TS 3.7.1.3 Emergency Condensate Storage Tank

In the performance of the steam generator test the water level may go below normal levels but in the performance of these tests, it will not be allowed to go below 60,000 gallons. Further, the normal backup sources of water will still be available.

AUG 18 1980

We conclude that the proposed Technical Specification change is acceptable because the minimum water supply will never fall below 60,000 gallons.

### 3.0 ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types, total amounts or an increase in design power level of 2900 Mwt. The test program will not result in any environmental impacts other than those evaluated in the Staff's Safety Environmental Statement since the test program is encompassed by the overall activity evaluated in the Final Environmental Statement. Therefore, we have concluded based on the considerations discussed above, that: (1) it does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public. Also, we reaffirm our conclusions as otherwise stated in our Safety Evaluation and its supplements.

### 4.0 CONCLUSIONS

On the basis of the above considerations, we have determined that conducting the water hammer test as described in the Virginia Electric and Power Company's letter of July 9, 1980, will not result in undue risk to the public health and safety of the public.

We have reviewed the Technical Specification exceptions proposed by the licensee to perform the water hammer test. The five exceptions are needed to block the auxiliary feedwater system pump actuation signal and the safety injection signal which would be energized by placing the steam generator under test in the test mode. Our safety evaluation of each of these exceptions is as stated above. During the performance of the test the available water will not be allowed to go below 60,000 gallons and backup sources (300,000 gallons) are available.