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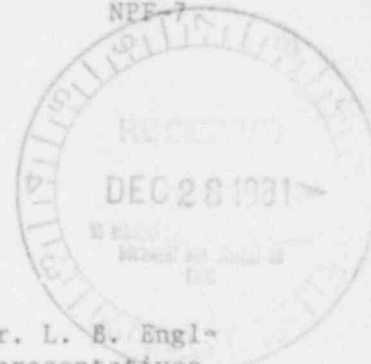
December 22, 1981

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Attn: Mr. Robert A. Clark, Chief
Operating Reactors Branch No. 3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Serial No. 387A
NO/RGS/jmj:SP1
Docket Nos. 50-338
50-339
License Nos. NPF-4
NPF-7

Gentlemen:

RESPONSE TO NRC TECHNICAL EVALUATION
BYPASS AND RESET OF ENGINEERED SAFETY FEATURES
NORTH ANNA UNIT NOS. 1 AND 2



On November 30, 1981, in a telephone conference between Vepco, Mr. L. B. Engl- and Mr. J. T. Beard of the NRC, and Franklin Research Center representatives, the technical evaluation of the bypass and reset of Engineered Safety Features for North Anna 1 and 2 was discussed. Vepco agreed to review the recommendations of this evaluation and prepare a written response detailing our commitments for design modifications.

We have completed our review and submit the following responses.

Your comments referenced six (6) general criteria that must be met regarding the bypass or reset of engineered safety features equipment. Listed below are Vepco comments on the referenced criteria. Where exceptions are taken by Vepco, they are noted with justification given for the exception.

Criterion 1 - In keeping with the requirements of General Design Criteria 55 and 56, the overriding of one type of safety actuation signal, e.g., radiation, should not cause the blocking of any other type of safety actuation signal, e.g., pressure, for those valves that have no function besides containment isolation.

NRC REQUEST:

"Circuitry provided for the control of the feedwater bypass valves does not satisfy Criterion 1. The "reset" provided at the SSPS SAF-OUT board for this subsystem is actually on override. This override will terminate an output signal and block system actuation by a second input signal until the first is cleared. Circuit design changes should be required to satisfy Criterion 1."

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VEPCO RESPONSE:

Based on the NRC interpretation of Criterion 1 relative to override functions, Vepco will modify the circuitry for the feedwater bypass valves such that the presence of one input signal does not block another input signal following reset. This will prevent blocking a second input signal to the feedwater bypass valves' circuitry while the first input remains uncleared. Since this modification deals with Westinghouse supplied systems, Westinghouse will be contacted for concurrence to the above mentioned change prior to implementation.

Criterion 2 - Sufficient physical features e.g., key lock switches, are to be provided to facilitate adequate administrative controls.

NRC REQUEST:

"Systems employing pushbutton actuated "resets" (ie. containment isolation Phase A and Phase B, Containment Spray, and Feedwater Bypass Valve Isolation) do not comply with Criterion 2. These "resets" actually function as overrides and require appropriate physical features to ensure that they cannot be operated inadvertently and are operated only with proper supervisory control."

VEPCO RESPONSE:

Based on NRC interpretation of Criterion 2, Vepco will initiate a modification that involves the addition of covers to the pushbutton reset switches for containment isolation - Phase A and Phase B, Containment Spray, and Feedwater Bypass Valve Isolation. Because of the modification that will be made to address Criterion 1, it may not be necessary to include the Feedwater Bypass Valve Isolation under this criterion.

Criterion 3 - A system level annunciation of the overridden status should be provided for every safety system impacted when any override is active. (See R.G. 1.47).

NRC REQUEST:

"Systems employing pushbutton actuated "resets" (ie. Containment Isolation Phase A and B, Containment Spray, and Feedwater Bypass Isolation) do not comply with Criterion 3. These "resets" actually function as overrides and require system level annunciation."

VEPCO RESPONSE:

Although Vepco is not required to meet R.G.1.47 at North Anna, Vepco will explore providing system level annunciation for reset of Containment Isolation Phase A and B, Containment Spray and Feedwater Bypass Isolation. Because of the modification that will be made to address Criterion 1, it may not be necessary to include the Feedwater Bypass Isolation under this criterion. Vepco has determined that the existing annunciator windows in the control room are limited at North Anna. Consequently, a review of the existing annunciator window arrangement will be conducted over the next several months. If it is determined that additional material will be required to provide the system level annunciation discussed above, it is possible that implementation of the annunciation modifications could extend beyond 1982.

Criterion 4 - Diverse signals should be provided to initiate isolation of the containment ventilation system. Specifically, containment high radiation, safety injection actuation, and containment high pressure (where containment high pressure is not a portion of safety injection actuation) should automatically initiate containment ventilation isolation."

NRC Comment:

Criterion 4 is not applicable at NAPS.

Vepco RESPONSE:

Vepco is in agreement with the NRC position regarding Criterion 4.

Criterion 5 - The instrumentation and control systems provided to initiate ESF should be designed and qualified as safety grade equipment.

NRC Comment:

"ESF instrumentation control systems at NAPS comply with Criterion 5."

VEPCO RESPONSE:

Vepco is in agreement with the NRC position regarding Criterion 5.

Criterion 6 - The overriding or resetting of the ESF actuation signal should not cause any valve or damper to change position.

NRC Comments:

"Criterion 6 is not satisfied at NAPS. Three instances were found with a resetting of an ESF signal will cause valves to change position.

- ° Air ejector vent to atmosphere isolation valves. The licensee may be able to justify this deviation from Criterion 6.
- ° Feedwater flow control valves. The NRC staff should find this to be an acceptable deviation from Criterion 6".

FRANKLIN RESEARCH CENTER (FRC) COMMENTS

"In the case of the feedwater flow control valves no manual (ie. pushbutton) reset is provided. The SAF-OUT device for these valves is a non-inverting driver which will deenergize its master relay when its input signal, from an upstream logic device, clears. This logic device incorporates a signal seal-in based on the status of the reactor trip breaker to prevent automatic clearing when the isolation signal is accompanied by a reactor trip. FRC's review of the feed and condensate system had determined that the reopening of the feedwater control valves following a feedwater isolation signal will not reduce below 2 the number of isolation barriers between the steam generator (or auxiliary feed pump discharge connection) and the low pressure portion of the feed and condensate system for either

the feed and condensate system for either isolation signal that might not be accompanied by a reactor trip (i.e., manual safety injection actuation or high steam generator water level). In either of these cases the initiating signal will shut the main feed line isolation valves and trip the main feed pumps. The main feed pump trip will cause the feed pump discharge valves to shut. Neither valve will automatically reopen upon the clearing of the isolation signal. Based on the foregoing it is FRC's opinion that this design feature should be found by the NRC staff to be an acceptable deviation from current Criterion 6 as established in the comments following Criterion 6 in Section 2 of this report."

- ° Feedwater bypass control valves. This situation should be corrected through design improvement."

FRANKLIN RESEARCH CENTER COMMENTS

"In the case of the feedwater bypass valves, repositioning will follow a single operator action (depressing the feedwater bypass valve blocked "reset" pushbutton) regardless of the status of isolation signals. Further, the reopening of these valves, since they bypass the feedline isolation valves, results in there being only two valves (the feed pump discharge valve and the feedline check valve) between the feed pump and steam generator. In the unlikely situation of the failure of the feed pump to trip in response to the isolation signal only the check valve will remain and steam generator feed will occur should the bypass valves be open.
This situation should be corrected through design improvement."

VEPCO RESPONSE:

- ° Air ejector vent to atmosphere isolation valves - Vepco does not intend to make any changes under Criterion 6 concerning the circuitry for the air ejector vent to atmosphere isolation valve, since the present circuitry receives a high radiation signal and a containment isolation phase A signal even though this valve is not a containment isolation valve. For this circuit, if containment isolation were reset and there was a high radiation condition, the air ejector vent to atmosphere isolation valves would still remain closed. If no high radiation condition were present, no detrimental situation would be encountered if the valve opened after resetting containment isolation.
- ° Feedwater flow control valves - Vepco is in agreement with the Franklin Research Center's opinion regarding this circuit and does not intend to make circuit modifications.
- ° Feedwater bypass control valves - Based on the NRC interpretation of Criterion 6, Vepco will modify the circuitry to ensure that a single operator action (depressing the feedwater bypass valve blocked "reset" pushbutton) will not reposition the valves regardless of the status of isolation signals. Additional relays and pushbuttons will be added so that a second operator action will be required to reopen the individual feedwater bypass valves.

It is Vepco's intention to attempt to modify the applicable circuits for Units 1 and 2 during the next refueling outage for each unit presently scheduled for the Spring and Summer of 1982. However, any unfinished work would be completed during the following Fall maintenance outages for both units.

If we can be of assistance in clarifying or interpreting information submitted with this response, please advise.

Very truly yours,



R. H. Leasburg

cc: Mr. James P. O'Reilly
Office of Inspection and Enforcement
Region II