Central File

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Serial No. 421
NO/RGS/jmj
Docket Nos. 50-280
50-281
50-338
50-339
License Nos. DPR-32
DPR-37
NPF-4
NPF-7

Dear Mr. O'Reilly:

IE BULLETIN 80-06
NORTH ANNA POWER STATION UNIT NOS. 1 AND 2
SURRY POWER STATION UNIT NOS. 1 AND 2

This letter is in response to IE Bulletin 80-06: "Engineered Safety Feature (ESF) Reset Controls".

We have completed our review of the subject bulletin and have determined that certain safety-related equipment does not remain in the emergency mode upon the reset of an ESF actuation signal. Until design modifications can be implemented, changes to station procedures have been made to incorporate the requirements that the safety-related equipment will remain in its emergency mode following the reset of an ESF signal.

NRC Request

1. Review the drawings for all systems serving safety-related functions at the schematic level to determine whether or not upon the reset of an ESF actuation signal, all associated safety-related equipment remains in its emergency mode.

Response

On November 6, 1979, during a review at our North Anna Power Station of system operation subsequent to a unit trip and safety injection actuation, it was discovered that certain safety-related equipment returned to its non-safety mode upon reset of an ESF actuation signal. This condition was reported to the NRC for Unit 1 pursuant to Technical Specification 6.9.1.8.i and for Unit 2 pursuant to 10 CFR 50.55(e). At that time a review of the drawings for all systems serving safety-related functions was immediately initiated to determine if any other deficiencies existed. This review was performed by our architect engineer and Vepco for North Anna.

COPY

When the discrepancies in the ESF control circuits were discovered at North Anna, we instructed our architect-engineer to review the control circuitry of ESF systems at Surry Power Station Units 1 and 2 to determine if similar problems existed at that facility.

The results of our review of North Anna and Surry drawings for all safety-related equipment serving as protective functions indicate that certain equipment will not remain in the emergency mode when the ESF actuation signal is reset. The affected control circuits are addressed in our response to Item 3 of the Bulletin.

NRC Request

2. Verify the actual installed instrumentation and controls at the facility are consistent with the schematics reviewed in Item 1 above by conducting a test to demonstrate that all equipment remains in its emergency mode upon removal of the actuating signal and/or manual resetting of the various isolating or actuation signals. Provide a schedule for the performance of the testing in your response to this Bulletin.

Response

A review was performed by Vepco North Anna and Surry site personnel of station procedures used to verify that all safety-related equipment remains in its emergency mode upon the removal of ESF signals. The results of our review are as follows:

North Anna Units 1 and 2

Test procedures for both units have been modified to demonstrate that all equipment remain in its emergency mode upon resetting of the actuation signals.

The following tests were modified:

a. Safety Injection Functional Test
b. Containment Depressurization Actuation Functional Test

Verification tests will be performed as a part of required system functional tests during the next unit refueling outage. The refueling outages for Units 1 and 2 are scheduled for December 1980 and September 1981 respectively.

The following test will be developed to test main steam line isolation.

Main Steam Line Isolation Reset Test

This test will also be performed during the refueling shutdown of the applicable unit.

It should be noted that individual control circuit tests have been performed on the modified circuits as listed in Item 3. These were performed as a part of the implementation of the design change.

Surry Units 1 and 2

The following test procedures have been modified for both units to demonstrate that all equipment remains in its emergency mode upon the resetting of the ESF actuation signals:

a. Safety Injection Functional Test
b. Consequence Limiting Safeguards Functional Test

Verification tests will be performed as a part of required system functional tests during the next Unit 1 refueling outage scheduled for the fall of 1980 and prior to the Unit 2 start-up.

NRC Request

3. If any safety-related equipment does not remain in its emergency mode upon reset of an ESF signal at your facility, describe proposed system modification, design change, or other corrective action planned to resolve the problem.

Response

It has been determined that design modifications should be made to certain safety-related equipment control circuits, as detailed below, to ensure that the equipment remains in its emergency mode upon the reset of an ESF signal.

NORTH ANNA UNIT NOS. 1 AND 2

Component/System	Problem	Solution	Design Change Implementation Schedule
1. Inside/Outside Recirc. Spray Pumps	CDA Signal energizes a timer after reset time delay timer starts pump. If the CDA signal is reset before timer starts the pump, the pump will not start which is its non-safe mode.	Add an auxiliary relay in parallel with timer and seal-in CDA contact such that if CDA is reset prior to timer starting pump, timer will remain energized, the operator must place control switch in "stop" or "Pull-to-Lock" Position to then defeat pump starting.	Design Change implementation completed.
2. Control Room Supply and Exhaust AOD	An S.I. signal closes all AOD's when S.I. is reset the AOD's reopen.	Wire a seal-in contact such that when S.I. is reset the S.I. output relay remains energized. Manual reset switch from bottled air system used to return system to normal.	Design Change implementation completed.

3. Iodine Filter Bank AOD's	CDA signal de-energizes SOV to admit air to charcoal filter. Resetting CDA signal re-energizes SOV diverting air flow around charcoal filter.	Added an auxiliary relay to seal-in CDA signal such that operator must also place AOD selector switch in "Open" position to reposition AOD's after resetting CDA.	Design Change implementation completed.
4. Safeguards Area Exhaust Fan Filter SOV's	CDA signal de-energizes SOV to admit air to charcoal filter. Resetting CDA signal re-energizes SOV diverting air flow around charcoal filter.	Added an auxiliary relay to seal-in CDA signal such that operator must also place AOD selector switch in "Open" position to re-position AOD after re-setting CDA.	Design Change implementation completed.
5. Containment Recirc. Cooling fans	CDA signal trips the Containment Recirc. Cooling Fans, resetting the CDA signal restarts fan.	Removed auto start contact on control switch from control circuit. This forces operator to manually restart the fans if required.	Design Change implementation completed.
6. Service Water valves to containment Recirc. Air Coolers	CDA signal operates associated SW valves. Should Service Water mode selector switch be in Service Water position, resetting CDA will auto-matically shift valves to nonsafety mode.	A letter to the NRC from Vepco dated Dec. 14, 1979 discussing CDA/SI reset modifications at North Anna 1 committed to using administrative procedures to adequately control these devices.	None required
7. Service Water Radiation Monitoring Sample Pumps	CDA signal energizes timer after reset time delay timer starts pump. If CDA signal is reset before timer starts pump, pump will not start which is the nonsafe mode.	Utilize existing spare relay in MCC circuit to seal-in CDA signal such that resetting CDA will not defeat pump starting. The operator must also place pump selector switch in the "Stop" position to defeat starting.	Design Change is to be implemented at the next refueling outage.

Component/System	Problem	Solution	Design Change Implementation Schedule
8. Main Condenser Air Ejector to containment	Normally closed containment isolation valves between condenser and containment open on high radioactivity level in condenser and close on containment isolation Phase A (CI-ϕA) Problem arises when operator resets Containment Isolation Phase A (CI-ϕA) signal and containment isolation valves re-open.	Install an additional relay & selector switch to achieve the two operator actions required when resetting a safety signal.	Design Change to be implemented at the next refueling outage
9. Control Rod Drive Cooling Fans	CDA signal stops Control Rod Drive Cooling Fans. Resetting CDA signal starts fans returning them to non-safety mode.	Provide seal-in CDA output relay in relay cabinet and add reset switch such that operator must reset CDA signal and reset seal-in CDA output relays via reset switch.	Design Change is to be implemented at the next refueling outage for Unit 1. Design Change completed for Unit 2.
10. Turbine Driven Auxiliary Feedpump	A SI signal starts pump. Resetting SI signal stops the pump, returning it to the non-safety mode. Two delibrate operator actions should be required to return pump to nonemergency mode.	Add relay to seal-in SI contact since resetting SI will not stop pump. Pump selector switch must also be placed in "stop" position to stop pump.	Design Change is to be implemented at the next refueling outage for Unit 1. Design Change completed for Unit 2.
11. Main Steam Line Trip Valves SOV's	With a main steam line isolation signal, the trip valves will close. When CDA is reset, the trip valve will attempt to open which is the nonsafety mode.	Modify control circuit for SOV's such that it will be necessary to press an open switch to break a seal-in of the SOV to open the trip valve.	Design Change is to be implemented at the next refueling outage.

SURRY UNITS NOS. 1 AND 2

Component/ System	Problem	Solution	Design Change Implementation Schedule
1. Inside/Outside Recir. Spray Pumps	Resetting CLS signal before time delay will defeat starting of pumps.	The capability of resetting the CLS signal prior to the completion of the time delay may be desirable, but could only occur if the containment were subatmospheric which would not represent a safety hazard.	None Required
2. Control Room Supply and Exhaust MOV's	Control Room Ventilation Valves are MOV's not AOD's as on North Anna Units.	No problem exists with present circuits.	None Required
3. Iodine Filter Bank AOD's	Resetting CLS signal will divert air flow around charcoal filter.	Auxiliary Building Ventilation System is being extensively modified. Problem will be mitigated by administrative control in the interim.	Modified circuits are to be installed in the fall of 1980.
4. Safeguards Area Exhaust Fan Filter SOV's	Resetting CLS signal will divert air flow around charcoal filter.	Auxiliary Building Ventilation System is being extensively modified. Problem will be mitigated by administrative control in the interim.	Modified circuits are to be installed in the fall of 1980.

	Component/ System	Problem	Solution	Design Change Implementation Schedule
5.	Containment Recirc. Cooling Fans	Containment Recirc. Fans trip on CLS, no auto start.	No problem exists with present circuits.	None required
6.	Service Water Valves to Containment Recirc. Air Coolers	No mode selector switch is used. The control circuits operate properly. No change in mode when the CLS signal is reset.	No problem exists with present circuits.	None required
7.	Service Water Radiation Monitoring Sample Pumps	CLS Signal starts Rad. Monitoring Pumps with no time delay in circuit. The CLS contact is sealed in by a starter contact, therefore resetting CLS signal causes no problem.	No problem exists with present circuits.	None required
8.	Main Condenser Air Ejector to Containment	TV-SV-102 will reopen when CLS (both trains) is reset with a high radiation signal from condenser.	A containment isolation valve has been installed between the containment and TV-SV-102 which does not receive an air ejector high radiation signal. This TV-SV-102 is no longer considered to be a containment isolation valve.	None required
9.	Control Rod Drive Cooling Fans	These circuits contain no CLS inputs, only manual on-off selector switches.	No problem exists with present circuits.	None required

Component/ System	Problem	Solution	Design Change Implementation Schedule
10. Turbine Driven Auxiliary Feedpump	An MOV and a PCV are used to supply the motive force to the Aux. Feedpump (turbine driven). SI or CLS contacts are not used for pump start initiation.	No problem exists with present circuits.	None required
11. Main Steam Line Trip Valve SOV's	With CLS signal initiated, the trip valves will close. When CLS is reset, the trip valves should not attempt to open as the Train A control circuit is designed with a seal-in function. Should control power be lost to the Train A circuit, resetting the CLS signal will attempt to open the trip valves which is the nonsafe mode.	Modify control circuit for SOV's such that it will be necessary to reset the seal-in feature of the SOV to open the trip valve. Interim administrative procedures are being utilized until the Design Change can be implemented.	Design Change to be implemented at the next refueling outage.

NRC Request

4. Report in writing within 90 days, the results of your review and include a list of all devices which respond as discussed in item 3 above, actions taken or planned to assure adequate equipment control, and a schedule for implementation of corrective action. This information is requested under the provisions of 10 CFR 50.54 (f). Accordingly, you are requested to provide, within the time period specified above, written statements of the above information, signed under oath or affirmation. Reports shall be submitted to the Director of the appropriate NRC Regional Office and a copy shall be forwarded to the NRC Office of Inspection and Enforcement Division of Reactor Operations Inspection, Washington, D. C. 20555.

Response

The actions taken or planned to assure adequate equipment control and a schedule for implementation of corrective action have been delineated in our response to Item 3 of the subject Bulletin.

Very truly yours,

B. R. Sylvia
Manager - Nuclear Operations
and Maintenance

cc: Mr. Victor Stello, Director
NRC Office of Inspection and Enforcement
Division of Reactor Operations Enforcement
Washington, D. C. 20555

COMMONWEALTH OF VIRGINIA)
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CITY OF RICHMOND)

Before me, a Notary Public, in and for the City and Commonwealth aforesaid, today personally appeared B. R. Sylvia, who being duly sworn, made oath and said (1) that he is Manager-Nuclear Operations and Maintenance of the Virginia Electric and Power Company, (2) that he is duly authorized to execute and file the foregoing statements in behalf of that Company, and (3) that the statements are true to the best of his knowledge and belief.

Given under my hand and notarial seal this 27th day of June, 1980.

My Commission expires January 20, 1981.

Robert M. Rad
Notary Public

(SEAL)