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June 10, 1980

Mr. James G. Keppler, Director
Directorate of Inspection and
Enforcement - Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Response to IE Bulletin 80-06,
"Engineered Safety Feature (ESF) Reset Controls",
Dresden Station Units 1, 2 and 3,
Quad Cities Station Units 1 and 2,
Zion Station Units 1 and 2
NRC Docket Nos. 50-10/237/249,
50-254/265, 50-295/304

Reference (a): J. G. Keppler letter to C. Reed dated March 13, 1980

Dear r. Keppler:

In response to the request for information regarding engineered safety feature (ESF) reset controls contained in Reference (a), Commonwealth Edison has performed the review requested. The results of that review for Dresden Units 2 and 3, Quad Cities Units 1 and 2 and Zion Units 1 and 2 are provided in the enclosure to this letter. For Dresden Unit 1, the review will be conducted after the final ECCS and TMI design modifications are made and prior to restart of that unit.

Based upon the boiling water reactor (BWR) review completed for Dresden Units 2 and 3 and Quad Cities Units 1 and 2, it has been confirmed with the one exception discussed in the enclosure, that reset of an ESF signal will not compromise any protective action of equipment. Unlike the PWR design discussed in Reference (a), reset of the ESF signal is not mandatory on a BWR as a part of the operator response to an accident. The reset will generally only occur after the initiation signals have cleared. If the reset action places the equipment into a position whereby it would not re-start upon the recurrence of an ESF signal, then protective actions are compromised, and design changes should be considered. However, requiring that equipment remain in its emergency mode after the need for the equipment has expired (based on the initiation signal no longer being present), is outside the scope of Bulletin

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80-06 as defined by the example deficiencies contained therein. Therefore, although the enclosed BWR review summary addresses all reset logic reviewed, proposed modifications are identified only if the present system design may compromise the protective action of equipment.

If you have any further questions in this regard, please direct them to this office.

Very truly yours,

D. L. Peoples

D. L. Peoples
Director of
Nuclear Licensing

Enclosure

cc: NRC Office of Inspection and Enforcement
Division of Reactor Operations
Washington, DC 20555

SUBSCRIBED and SWORN to
before me this 11th, day
of June, 1980

Notary Public

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Enclosure

Commonwealth Edison Company
Response to IE Bulletin 80-06

Dresden Station Units 2 and 3

1. Electrical schematics for all ESF systems have been reviewed to determine whether safety-related equipment remains in its emergency mode after the reset, either automatically or manually, of an ESF actuation signal. Systems reviewed are as follows:

   Core Spray

   Low Pressure Coolant Injection (LPCI)

   Containment Cooling Service Water (CCSW)

   High Pressure Coolant Injection (HPCI)

   Automatic Depressurization System (ADS)

   Isolation Condenser

   Diesel Generator & Auxiliaries

   Standby Gas Treatment System (SBGT)

   Primary Containment Isolation System (Groups I through IV)

   Reactor Protection System (RPS)

   Atmosphere Containment Atmosphere Dilution/Containment Air Monitoring System (ACAD/CAM)

   Although system logic by which equipment is returned to its normal operating mode on automatic or manual reset of an ESF signal is discussed below, modifications are only proposed for those situations which may result in the compromise of a protective action, i.e. if the reset places the equipment into a position whereby it would not re-start upon recurrence of an ESF signal or the performance of equipment on recurrence of ESF signal could be compromised.

   HPCI System

   A. Valves - 2301-64, 65, 29 and 30 - These valves close on HPCI system initiation, however, once the ESF signal clears, the manual reset pushbutton will allow all of these valves to open if the two-position control switch for the valve is in the open position.

Valve - 2301-28 - This valve opens on system initiation and will close on manual reset after the ESF signal clears, if the two-position control switch is in the closed position.

Since operation of the valves as discussed above will not jeapardize the performance of the protective action of the HPCI system, no modification is required. The subject valves control drainage flow to the main condensor and HPCI room sump and do not affect HPCI system operability. In addition, the reset pushbutton in question is specific to these drain valves and would be used for the specific purpose of returning the valves to their normal position.

B. Auxiliary Oil Pump - The existing circuit arrangement allows the pump to stop if the HPCI initiation signal clears, even though the HPCI turbine will continue to accelerate. Since this pump is fed from a dc cource, the system design requires it to be shut off as described above so as not to deplete the dc power source. Moreover, the primary (shaft driven) oil pump will remain operable during HPCI system operation.

ADS

All valves operated by ADS (203-3A, 3B, 3C, 3D, 3E) will close after opening on ESF actuation if the timer reset pushbutton is depressed. This appears to be consistent with proper system operation, and no changes are proposed.

Isolation Condenser

The Isolation Condenser is inadequate with respect to IE Bulletin 80-06 in terms of manually resetting a Group V PCIS signal. Valves 1301-1, 2, and 4 will all reopen upon manually resetting the isolation if their control switches are in the AUTO position. The proposed solution to this is to provide a modification to the control switches and circuitry similar to that accomplished for Group I, thereby providing positive operator action to reopen these valves. This modification will be completed during the next scheduled refueling outage.

PCIS

Group I has been modified on Unit 3 to meet the criteria of IE Bulletin 80-06. During the Unit 2 outage in May, 1980, the Group I circuitry will be modified to meet the Bulletin's criteria.

Groups II, III, and IV meet the criteria of IE Bulletin 80-06.

Group V is addressed under the Isolation Condenser.

RPS

Upon resetting a reactor scram signal, scram pilot solenoid valves, scram discharge volume vent and drain valves, scram dump valves, and scram backup valves all automatically reposition. This, however, is consistent with proper system performance. No changes are proposed.

ACAD/CAM

Although this system is not yet operational it will soon be placed into operation and, as a result, should be addressed with respect to IE Bulletin 80-06.

Valves 2599-1A, B; 3A, B all close on high drywell pressure (43 psig) to effect a system isolation. Once drywell pressure drops to below 43 psig, the valves will automatically reopen if their control switches are in the open position. The determination of whether or not this is consistent with proper system operation remains to be made and will be dependent on the ultimate usage of ACAD/CAM. No modification is proposed until further review is conducted. This system will not be placed into service until an evaluation against Bulletin 80-06 is completed.

2. Surveillance testing conducted by Instrument Mechanics verifies or has verified a good portion of the circuitry for the systems reviewed. However, to verify the desired actuations or non-actuations on automatic or manual resets, special in-depth tests must be conducted. Due to the depth of the tests and the systems involved, they will, of necessity, be conducted during plant shutdown periods. Since the only planned shutdown periods are refueling outages, the schedule for testing must be as listed here:

Unit 2	1981 Refueling Outage
Unit 3	1981/2 Refueling Outage

We will, as plant conditions permit, perform testing on other opportune occasions, however.

Quad Cities Station Units 1 and 2

1. Schematic drawings for Units One and Two have been reviewed for all safety-related systems. Those ESF considered in this review are as follows:

Reactor Protection System Initiation
Primary Containment Isolation
ECCS and Diesel Generator Initiation

Reactor Building Vent Isolation
Off-Gas System Isolation
Control Room Vent Isolation

a. Both manual and automatic reset features were reviewed. Manual resets are incorporated at the system level to reset valves and equipment, and not actuation signals themselves. These manual resets are as follows:

Off-Gas TRIP Reset - Re-opens off-gas isolation valves after high radiation trip signal has cleared. Resets 15-minute timer on off-gas spike.

RPS Scram Reset - Closes scram valves and re-energizes scram pilot solenoid valves after RPS trip signals have cleared.

Control Room Vent Isolation Reset - Re-opens outside air and exhaust air dampers, provided SBGT initiation, main steam high flow, smoke detector, and cold outside air signals have cleared.

Reactor Building Vent Isolation Reset - Opens vent isolation dampers after isolation signals have cleared.

Groups I, II, and III PCI Resets - Permissive to re-open isolation valves provided the valves in the Group are first placed in the closed position, and all isolation signals are cleared for that Group.

Auto-Blowdown Timer Reset - If Auto-Blowdown initiation signals have cleared, can re-close relief valves.

Auto-Blowdown Drywell Pressure Reset - Resets drywell pressure relays for auto-blowdown after drywell high pressure condition has cleared. Allows relief valves to re-close if low low reactor water level condition has reset.

HPCI and RCIC Isolation Resets - Permissive to re-open Group IV or Group V Isolation valves provided isolation signals have cleared.

HPCI Drain Valves Reset - Re-opens HPCI drains to condenser and closes drains to drain pot provided initiation signals have cleared.

RHR Logic Resets - Permissive to Re-open RHR valves after LPCI initiation signals have cleared. Also, permissive to re-position LPCI and Recirculation valves after LPCI loop-select initiation signals have cleared.

Group II MO-1001-29 Valve Reset - Permissive for MO-1001-29A/B to auto-open after GROUP II Isolation while shutdown cooling in progress.

b. In all the above cases, as well as for the automatic reset features involved with the ESF considered, no equipment diverts from its emergency mode when the actuation signals are reset. Upon automatic reset of the ESF signals, equipment remains in its designated emergency status; and positive operator action (by way of manual reset at the system level for valves and equipment, or by manipulation of controls) is necessary to return the equipment to normal operating status, or to shutdown the equipment. In no case does the manual reset of equipment or automatic reset of ESF actuation signals, result in safety equipment being incapable of sustaining an initiation should the ESF actuation signal re-appear.

2. A detailed review was conducted, persuant to this bulletin, of the various surveillance tests that are routinely performed related to those ESF considered as required by the Technical Specifications. This testing is utilized to not only verify the operability and serviceability of instrumentation, controls, and equipment, but to also confirm the as-built configuration of these items as compared to the schematics. Procedures have been reviewed to assure that functional tests, logic tests, and simulated automatic initiation tests are detailed and adequate to asure that the schematics and actual installed equipment are consistent. Specific procedues reviewed included:

RPS Instrument Functional Tests
Off-Gas High Radiation Simulated Initiation
4 KV Undervoltage Functional Tests
Simulated ECCs and Diesel Generator Auto Initiation
PCI Logic and Simulated Initiation
ECCS Logic Tests
PCI Instument Functional Tests
ECCS Instrument Functinal Tests
Reactor Building Vent/Fuel POOL Monitor Functional Tests and Simulated Initiation

Based on the extensive surveillance program in existence, adequate verification of electrical schematics has been achieved, and no additional testing is proposed.

3. No design changes or modifications are proposed, based on the reviews conducted above.

Zion Station Units 1 and 2

1. The schematic drawings involving engineered safety features have been reviewed for Zion Station. The following equipment will

reset to the preactuated position on a reset of safety injection.

a. Unit I: OAOV-SW0020
Unit II: OAOV-SW0021

These valves supply cooling water to room coolers and the diesel containment spray pump engine for its respective unit. Control circuitry for these valves contain interlocks which prevents them from returning to the presafety injection position if the equipment served by these valves is in operation. Therefore, the removal of the safety injection signal on reset will not cause the valves to return to the presafety injection, closed position. No further action is required on this equipment.

b. OFCV-SW54

This valve is the service water strainer backwash discharge valve. It will reopen on a reset of safety injection. A modification has been initiated to keep it in the actuated position.

c. OFCV-CA10B and OFCV-CA11B

These valves are for hypochlorite injection into the service water system. Modifications have been initiated to keep these valves in the actuated positions.

On a reset of containment ventilation isolation the containment fan coolers dampers would return to the preactuation position.

If these dampers were actuated during an actual accident, the containment ventilation isolation reset would not be reset. Also the emergency operating procedures require the operators to match the control switches with the position of the actuated equipment. Therefore, these dampers will not return to the preactuated position, because the control switch is in the accident position.

No furter action is required on this equipment.

On a reset of containment pressre high-high, phase B containment isolation no equipment will return to the preactuated position.

All other equipment will stay in the actuated position until operated on the individual component level.

2. A test is being written to verify all equipment remains in the actuated position. The test will follow PT-10 which is done quarterly. It wil be performed on both units within six months.

3. The modifications previously identified will consist of switches and relay logic in such a manner so the switch will have to be actuated to reset the component. The hypochlorite valves will be defeated completely since the hypochlorite system is not used at Zion Station.

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