



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION III  
799 ROOSEVELT ROAD  
GLEN ELLYN, ILLINOIS 60127

MAY 02 1983

MEMORANDUM FOR: D. G. Eisenhut, Director, Division of Licensing, NRR  
FROM: C. E. Norelius, Director, Division of Project and Resident Programs  
SUBJECT: REQUEST FOR TECHNICAL ASSISTANCE TO DELINEATE APPROPRIATE LICENSEE ACTIONS FOLLOWING FAILURE OF CERTAIN ECCS/CONTAINMENT ISOLATION VALVES

An incident recently occurred at Dresden Unit 3, that requires further clarification by your office. During a surveillance on the Low Pressure Coolant Injection (LPCI) System, a motor operated suction valve (1501-5D) for one of the LPCI pumps failed to cycle correctly. The valve, which is normally left in the open position, was closed during the surveillance and could not be reopened from the control room. To preclude declaring the LPCI system inoperable, the valve was manually opened and electrically disarmed.

According to Dresden's Updated Final Safety Analysis Report (UFSAR), this valve and other similar low pressure Emergency Core Cooling Systems (ECCS) suction valves perform containment isolation functions. Section 6.2.4.2.4.5 of the UFSAR states in part:

"Because the low pressure ECCS piping outside the drywell up to the first outside isolation valve is considered a logical extension of the primary containment, the piping must meet the same design, surveillance and testing criteria as the primary containment. . . All leakage in the ECCS outside the primary containment can be isolated from the suppression chamber and the primary system itself."

In addition, these valves also appear in the UFSAR table: 5.2.2.5, "Principle Penetrations of Primary Containment and Associated Isolation Valves."

*B/S*

MAY 02 1983

The Dresden Technical Specifications do not address these valves as containment isolation valves. These valves do not have the automatic closure initiation as other isolation valves because they are required to be open to support ECCS operation and therefore are exempt from the automatic closure function. It is our understanding however, that these valves must be capable of being closed by operator action from the control room or another remote operator in the plant in the event of excess leakage from the system to effect containment isolation.

The Resident Inspectors identified to the licensee that these valves perform a primary containment isolation function according to their UFSAR, and were not capable of performing that function with the valve open and electrically deactivated. The licensee started to electrically reconnect the valve. In the mean time, the valve was repaired and placed in service.

These valves were also a subject of the Systematic Evaluation Program (SEP), Topic VI-4, and are identified under integrated assessment 4.18.2 in NUREG-0823. The staff position was ". . . that adequate leakage detection and appropriate procedures for operator action should be provided and the operating station should be relocated to an accessible area, where necessary . . ."

This situation raises several questions:

1. The LPCI (1501-5D) valve has an automatic open signal which opens the valve if closed when an ECCS automatic initiation signal is received. The automatic open portion of the valve was not operable because when the valve closed it was incapable of being automatically opened. Would the valve be considered inoperable or operable with only the automatic open capability inoperable, and the valve was open with the capability of closing?

The regional position is that if any automatic function of an ECCS or Containment Isolation becomes inoperable the valve is inoperable. The valve must be considered inoperable even if the automatic function is not presently needed (e.g., valve open and automatic open function not operable).

2. When an ECCS/Containment Isolation valve is declared inoperable, what is the correct action to be taken by the licensee? Should the valve be placed in the open position thereby maintaining the operable status of that ECCS loop but violating the Technical Specification definition of primary containment? Or, should the valve be placed in the closed position, and in that way maintain primary containment, but by the same action, enter a Limiting Condition for Operation (LCO) for the affected system?

MAY 02 1983

The regional position is that the licensee should take the most conservative approach to the problem. The valve should be closed to maintain primary containment and the appropriate LCO should be entered. However, if only the automatic open function is inoperable the valve may be opened while keeping closure capability, declare the valve inoperable, and take the action of the LCO associated with an inoperable ECCS system.

3. Once an ECCS/Containment Isolation valve is declared inoperable and the valve is then placed in a designated configuration (either open or closed), should the valve be electrically deactivated to prevent a possible automatic initiation from causing the valve configuration to change? (An example would be closure of the 1501-5D valve and electrically deactivating it to prevent an automatic initiation of LPCI to reopen the valve). Should an automatic initiation, in this case, be intentionally bypassed?

The regional position is that the valve should remain open if remote closure is possible. If this is not the case, the valve should be closed to provide containment isolation and it should be electrically disarmed to prevent reopening. In either case, the appropriate LCO for inoperable ECCS system should be entered.

4. Since the valve was not in the Technical Specifications, the associated action statement was not apparent to the licensee. Should ECCS pump suction valves (LPCI and Core Spray) be included in the Technical Specifications to identify the action to be taken when they become inoperable? If this is affirmative, Table 3.7.1 of the Dresden Unit 2 and 3 Technical Specifications, should be changed to include the valves.

The regional position is that these valves should be included in Technical Specifications and appropriate action statements should be added.

5. The SEP topic recommendation was that appropriate procedures for operator action should be provided. The licensee had not issued these procedures. Under what conditions would these valves be required to be closed?

The regional position is that these valves should be closed in the event of excess leakage, or if the capability of closing the valve remotely becomes inoperable.

D. G. Eisenhut

- 4 -

MAY 02 1983

These questions are naturally of great concern. We therefore request your response to these questions by June 1, 1983. Any clarification your office can bring to this matter is appreciated.

*RC Knopf for*

C. E. Norelius, Director  
Division of Project and  
Resident Programs

cc: R. Wessman, NRR



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 WASHINGTON, D. C. 20555

JUN 29 1983

PRINCIPAL STAFF	
RA	ENF
D/PA	SCS
A/PA	PAO
CE/PP	BLO
DR/PA	TRC
OR/TE	
DE	
ML	
OL	FILE

MEMORANDUM FOR: Charles E. Norelius, Director  
 Division of Project and Resident Programs  
 Region III

FROM: Darrell G. Eisenhut, Director  
 Division of Licensing, NRR

SUBJECT: TECHNICAL ASSISTANCE TO DELINEATE APPROPRIATE  
 LICENSEE ACTIONS FOLLOWING FAILURE OF CERTAIN  
 ECCS/CONTAINMENT ISOLATION VALVES

REFERENCE: Memorandum from C. E. Norelius to D. G. Eisenhut,  
 Dated May 2, 1983, Subject: "Request for Technical  
 Assistance to Delineate Appropriate Licensee  
 Actions Following Failure of Certain ECCS/  
 Containment Isolation Valves."

The referenced memorandum requests NRR's position concerning licensee actions following the failure of certain ECCS/containment isolation valves in regard to incidents which had recently occurred at Dresden Unit 3. In your memorandum, you raised five questions and offered the regional position on each of these five questions. Your questions and the regional positions are restated below and are followed by NRR's position.

Question 1

The LPCI (1501-5D) valve has an automatic open signal which opens the valve if closed when an ECCS automatic initiation signal is received. The automatic open portion of the valve was not operable because when the valve closed it was incapable of being automatically opened. Would the valve be considered inoperable or operable with only the automatic open capability inoperable, and the valve was open with the capability of closing?

The regional position is that if any automatic function of an ECCS or Containment Isolation becomes inoperable the valve is inoperable. The valve must be considered inoperable even if the automatic open function is not presently needed (e.g., valve open and automatic open function not operable).

8307130421  
 4pp

JUL 1 1983

B/27

JUN 29 1983

Response

We concur with the regional position on this matter. Such a position is consistent with our intent as expressed in our Standard Technical Specification definition of Operable-Operability which all power reactor licensees were requested to adopt via our generic letter of April 10, 1980. It is our position that if any function of the LPCI valve is inoperable, the valve must be declared inoperable. Furthermore, since opening of the valve is required for the LPCI system to perform its intended function, the LPCI system also must be declared inoperable.

Question 2

When an ECCS/Containment Isolation valve is declared inoperable, what is the correct action to be taken by the licensee? Should the valve be placed in the open position thereby maintaining the operable status of that ECCS loop but violating the Technical Specification definition of primary containment? Or, should the valve be placed in the closed position, and in that way maintain primary containment, but by the same action, enter a Limiting Condition for Operation (LCO) for the affected system?

The regional position is that the licensee should take the most conservative approach to the problem. The valve should be closed to maintain primary containment and the appropriate LCO should be entered. However, if only the automatic open function is inoperable the valve may be opened while keeping closure capability, declare the valve inoperable, and take the action of the LCO associated with an inoperable ECCS system.

Response

Our position on this question is that the licensee should follow the requirements of the applicable technical specification. In the event the applicable technical specification does not provide explicit criteria for positioning an inoperable ECCS/Containment Isolation valve, we would generally concur with the regional position that the valve should be closed so as to maintain containment integrity. Furthermore, the ECCS loop should be declared inoperable and its action statement complied with. In the case where such a valve was inoperable solely as a result of being unable to automatically open, we would consider it acceptable to maintain the valve in an open position provided the ECCS loop was declared inoperable, its action statement was complied with, and the valve was capable of being closed by an automatic containment isolation signal.

Question 3

Once an ECCS/Containment Isolation valve is declared inoperable and the valve is then placed in a designated configuration (either open or closed), should the valve be electrically deactivated to prevent a possible automatic initiation from causing the valve configuration to change? (An example would be closure of the 1501-5D valve and electrically deactivating it to prevent an automatic initiation of LPCI to reopen the valve). Should an automatic initiation, in this case, be intentionally bypassed?

The regional position is that the valve should remain open if remote closure is possible. If this is not the case, the valve should be closed to provide containment isolation and it should be electrically disarmed to prevent reopening. In either case, the appropriate LCO for inoperable ECCS system should be entered.

Response

If, as discussed in our response to your Question 2, an inoperable valve is closed to maintain containment integrity, it is our position that this valve should be electrically deactivated to preclude its subsequent inadvertent actuation. However, if a valve is inoperable and is being maintained in its open position in accordance with the criteria given in our response to your Question 2, it is our position that this valve should not be electrically deactivated since it would then be incapable of closing to provide containment isolation. Furthermore, we do not believe that automatic initiation of the ECCS loop should be bypassed.

Question 4

Since the valve was not in the Technical Specifications, the associated action statement was not apparent to the licensee. Should ECCS pump suction valves (LPCI and Core Spray) be included in the Technical Specifications to identify the action to be taken when they become inoperable? If this is affirmative, Table 3.7.1 of the Dresden Unit 2 and 3 Technical Specifications, should be changed to include the valves.

The regional position is that these valves should be included in Technical Specifications and appropriate action statements should be added.

JUN 29 1983

Response

As part of the ECCS systems, these valves would not normally be listed separately since the definition of Operable-Operability (which all power reactor licensees were requested to adopt via our generic letter of April 10, 1980) would require these valves to be operable in order for the ECCS systems to be operable. However, since these valves are considered as part of the boundary for containment isolation, it is our position that they should be included in Table 3.7.1, Primary Containment Isolation, of the Dresden Unit 2 and Unit 3 Technical Specifications and we will request the licensee to submit a licensee amendment to add them to Table 3.7.1.

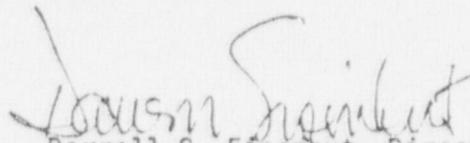
Question 5

The SEP topic recommendation was that appropriate procedures for operator action should be provided. The licensee had not issued these procedures. Under what conditions would these valves be required to be closed?

The regional position is that these valves should be closed in the event of excess leakage, or if the capability of closing the valve remotely becomes inoperable.

Response

As previously stated in our response to Question 2, our position is that the licensee should follow the requirements of the applicable technical specification. In the event the applicable technical specification does not provide explicit criteria for positioning an inoperable ECCS/Containment Isolation valve, we concur with the regional position that, in general, the valve should be closed so as to maintain containment integrity. Furthermore, the ECCS loop should be declared inoperable and its action statement complied with. In the case where such a valve was inoperable solely as a result of being unable to automatically open, we would consider it acceptable to maintain the valve in an open position provided the ECCS loop was declared inoperable, its action statement was complied with, and the valve was capable of being closed by an automatic containment isolation signal. However, there may be situations which can arise which will dictate different actions be taken concerning the disposition of these valves and they should be addressed on a plant specific basis by the licensee.

  
Darrell G. Eisenhut, Director  
Division of Licensing  
Office of Nuclear Reactor Regulation