

March 15, 2001

MEMORANDUM TO: Geoffrey E. Grant, Director
Division of Reactor Projects
Region III

FROM: Suzanne C. Black, Deputy Director */RA/*
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: TASK INTERFACE AGREEMENT (TIA) 99-030 FROM REGION III
REGARDING THE REPORTABILITY OF REACTOR CORE ISOLATION
COOLING (RCIC) SYSTEM FAILURES (TAC NO. MA7367)

By your memorandum dated December 9, 1999, Region III requested an interpretation of the guidelines in NUREG-1022, Revision 1, regarding the reportability of RCIC system failures. The central question is whether RCIC system failures are reportable (1) by virtue of the inclusion of RCIC in a plant's technical specifications, or (2) because RCIC performs a safety-related accident mitigation function that may or may not be stated in the accident analysis of the Updated Final Safety Analysis Report (UFSAR). Region III also asked if a generic communication should be considered to ensure that licensees consistently report RCIC system failures.

The staff has reviewed the rule and the guidelines and concluded that failure or inoperability of the RCIC system is not reportable by virtue of inclusion of the RCIC system in the plant's technical specifications. Details of the staff's evaluation are provided below.

Evaluation of Reportability

The regulations at 10 CFR 50.72(b)(3)(v)⁽¹⁾ and 10 CFR 50.73(a)(2)(v) require reports for any event or condition that

.... could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor and maintain it in a safe shutdown condition, (B) Remove residual heat, (C) Control the release of radioactive material, or (D) Mitigate the consequences of an accident.

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⁽¹⁾ This paragraph number was 10 CFR 50.72(b)(2)(iii) prior to January 23, 2001.

The regulations at 10 CFR 50.72(b)(3)(vi)⁽²⁾ and 10 CFR 50.73(a)(2)(vi) elaborate by indicating that events reportable under this criterion

... may include one or more procedural errors, equipment failures, and/or discovery of design, analysis, fabrication, construction, and/or procedural inadequacies. However, individual component failures need not be reported if redundant equipment in the same system was operable and available to perform the required safety function. [Emphasis added.]

The 1983 Statements of Considerations (SOCs) for 10 CFR 50.72 and 10 CFR 50.73 state the following:

It should be noted that there are a limited number of single-train systems that perform safety functions (e.g., the High Pressure Coolant Injection System [HPCI] in BWRs [boiling-water reactors]). For such systems, loss of the single train would prevent the fulfillment of the safety function of that system and, therefore, must be reported even though the plant Technical Specifications may allow such a condition to exist for a specified limited length of time.

As indicated, the rules directly define the structures and systems for which reporting is required, without reference to labels such as "engineered safety feature [ESF]," "safety related," or "important to safety." That is, a system's failure or inoperability is reportable if the system is needed to: shut down the reactor and maintain it in a safe shutdown condition; remove residual heat; control the release of radioactive material; or mitigate the consequences of an accident. It is clear that the RCIC system can perform some of these safety functions. The question is whether or not it is needed to perform any of them.

From 1984 until late 2000, the staff's reporting guidelines provided the following guidance:

The definition of the systems included in the scope of these criteria is provided in the rules themselves; it is not determined by the phrases "safety-related" and "important to safety."

Question: If RCIC is not a "safety system" in that no credit for its operation is taken in the safety analysis, are failures and unavailability of this system reportable?

Answer: If the plant's safety analysis considered RCIC as a system needed to remove residual heat (e.g., it is included in the Technical Specifications) then its failure is reportable under this criterion; otherwise, it is not reportable under this section of the rule.

Previously, the NRR staff adopted the view that a RCIC system failure is reportable if the RCIC system is included in the plant's technical specifications. That is, if plant operation (beyond a brief period of time) is not allowed without an operable RCIC system, then the RCIC system must be "needed" to remove decay heat and/or mitigate accidents. We believed at the time that this was the best interpretation of the rules. The alternative is to consider that the RCIC

⁽²⁾ This paragraph was added to the rules effective January 23, 2001.

system is not "needed" to perform any of these safety functions, in which case, it would not make sense to require that the RCIC system be operable.

Alternatively, however, one can consider that the term "needed" means only those systems for which the UFSAR explicitly claims credit to remove residual heat. An interpretation along these lines has been used by many BWR licensees since the rules were issued in 1983.⁽³⁾ This was the intent of the guidance and the NRC staff has accepted this approach for many years. For example, in a memo dated October 10, 1986, Chuck Norelius, the Director of the Division of Reactor Projects (DRP) in Region III, provided instructions to DRP personnel. The memo indicated that Mr. Norelius had discussed the question of reporting RCIC failures with the principal author of 10 CFR 50.72 and his branch chief. The memo stated that "Their response was that RCIC inoperability alone, for whatever reason, was not reportable under either 10 CFR 50.72 or 10 CFR 50.73, provided that the licensee has not taken credit for RCIC either as an Engineered Safety Feature or in their safe shutdown analysis." The memo also stated that "Resident inspectors are requested to discuss this matter with their licensees."

A close reading of the 1986 Norelius memo indicates that the NRC staff placed emphasis on whether the licensee took credit for the RCIC system as an ESF or in the safe shutdown analysis (i.e., whether the licensee took credit in the UFSAR for the RCIC system to mitigate an accident or remove residual heat). We were not previously sensitive to this, perhaps because we focused on the 1984 guidance, which was repeated in 1994 in NUREG-1022, Revision 1. This guidance refers parenthetically to inclusion of the RCIC system in the technical specifications. We believe that the parenthetical reference to the technical specifications was based on an assumption that if a system was included in the technical specifications, then credit for the system was taken in the UFSAR. However, that assumption is not correct.

In view of the NRC's historical practice in implementing 10 CFR 50.72 and 10 CFR 50.73, we have reconsidered the position, and now conclude that reporting of RCIC system failures is required by the relevant regulations for only those plants where the UFSAR explicitly claims credit for RCIC to remove residual heat. By its nature, this interpretation rules out the implication that RCIC system failures are reportable simply by virtue of the inclusion of the RCIC system in a plant's technical specifications.

At Monticello, although the RCIC system is included in the technical specifications, the UFSAR did not take explicit credit for the RCIC system to remove residual heat. Thus, RCIC system failure reporting is not required at Monticello.

Other Considerations

Northern States Power Company (NSP) staff at Monticello articulated their views in a conference call on May 3, 2000, between M. Hammer, B. Day, et al. (NSP), and M. Malloy, D. Allison, et al. (NRC). During the conference call, Monticello personnel suggested an alternative approach. Under this approach, the HPCI and RCIC systems would be considered in combination because together they serve to provide a high pressure injection function. Therefore, RCIC system failure, by itself, would not be reportable (at any BWR) because the HPCI system would still be able to provide adequate high pressure injection for all required

⁽³⁾ The licensees for about 10 BWRs have generally reported RCIC system failures in the past, and those for about 20 have not.

conditions. However, HPCI system failure, by itself, would continue to be reportable because the RCIC system cannot provide the high flow rates needed to support some of the accident mitigation functions required of the HPCI system. This is logically equivalent to the way in which we treat failure reporting in other systems. Also, it is consistent with the way in which the HPCI and RCIC systems are actually credited in accident analyses at those plants where credit is taken. However, the NRC considers the HPCI (or HPCS) and RCIC systems to be separate, single-train systems rather than a single system with each constituting a separate train.

In a letter dated October 24, 2000, the BWR Owners' Group (BWROG) advocated the position that reporting of RCIC system inoperability is not required unless: (1) HPCI/HPCS is also inoperable; or (2) RCIC is not restored to operability within the required time (typically 14 days). Either of these conditions would trigger a report based on the initiation/completion of a shutdown required by the technical specifications. Although stated and justified in different language, the result would be the same as the position advocated by Monticello personnel, described above. As in that case, we do not believe that this is an appropriate approach.

On October 25, 2000, the NRC published a final rule that modified the event reporting requirements in 10 CFR 50.72 and 10 CFR 50.73, effective January 23, 2001. The requirement to report "*Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems ...*" was modified by removing the word "alone." In the case of §50.72 the phrase "*at the time of discovery*" was inserted in place of the word "alone." Accordingly, some system failures that were previously reportable under both 10 CFR 50.72 and 10 CFR 50.73 will in the future only be reportable under 10 CFR 50.73. Otherwise, these rule changes do not affect the reportability considerations discussed above.

The NRR also published NUREG-1022, Revision 2, in October 2000. In Revision 2, the pertinent guidance was modified to read as follows:

The definition of the systems included in the scope of these criteria is provided in the rules themselves. It includes systems required by the TS to be operable to perform one of the four functions (A) through (D) specified in the rule. It is not determined by the phrases "safety-related," "important to safety," or "ESF."

Question: If RCIC is not a "safety system" in that no credit for its operation is taken in the safety analysis, are failures and unavailability of this system reportable?

Answer: If the plant's safety analysis considered RCIC as a system needed to ~~remove residual heat~~ mitigate a rod ejection accident (e.g., it is included in the Technical Specifications) then its failure is reportable under this criterion; otherwise, it is not reportable under this section of the rule.

In the answer to the question about RCIC, the previous guidance in NUREG-1022, Revision 1, used the phrase "remove residual heat." This could be taken broadly since residual heat removal is what the RCIC system does. In Revision 2, we changed the phrase to read "mitigate a rod ejection accident." Our intent was to make the statement clearer and more specific, since we believe that rod ejection is the only UFSAR accident analysis where licensees have taken credit for RCIC.

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In view of our reconsidered position, the guidance in NUREG-1022, Revision 2, can still be misleading in that the parenthetical statement about technical specifications can give the incorrect impression that RCIC failures are reportable whenever the RCIC system is included in the technical specifications. In the future, the Region should disregard the parenthetical statement and consider a licensee's reporting practice adequate if it meets that portion of the guidance which indicates that RCIC failure is reportable if the plant's safety analysis considered RCIC as a system needed to mitigate a rod ejection accident. This does not mean that RCIC system failures are reportable simply by virtue of the inclusion of the RCIC system in the plant's technical specifications. To ensure that all licensees are aware of this position, and to ensure consistent interpretation of the rules, we plan to issue a Regulatory Issue Summary.

Conclusions

Based on the above considerations, the NRR staff have concluded that RCIC system failures are not reportable simply by virtue of the inclusion of the RCIC system in a plant's technical specifications and RCIC system failure reporting is not required at Monticello.

In the future, the Region should consider a licensee's reporting practice adequate if it meets that portion of the modified (i.e., current) guidance which indicates that RCIC failure is reportable if the plant's safety analysis considered RCIC as a system needed to mitigate a rod ejection accident.

If you have any questions regarding this issue, please contact F. Lyon of my staff at (301) 415-2296.

Docket No. 50-263

cc: B. Platchek, RGN-I
L. R. Plisco, RGN-II
K. E. Brockman, RGN-IV

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*No substantive changes to 2/27/01 memo

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