

March 24, 2000

Mr. Valeri Tolstykh
Regulatory Activities Unit
Safety Assessment Section
Division of Nuclear Installation Safety
International Atomic Energy Agency
Wagramer Strasse 5
P.O. Box 100, A-1400
Vienna, Austria

Dear Mr. Tolstykh:

Enclosed are the following IRS reports:

- CHANGES CONCERNING FOREIGN OWNERSHIP, CONTROL, OR DOMINATION OF NUCLEAR REACTOR LICENSEES (NRC Regulatory Issue Summary 2000-01).
- CLOSURE OF GENERIC SAFETY ISSUE 23, REACTOR COOLANT PUMP SEAL FAILURE (NRC Regulatory Issue Summary 2000-02).

Each report is being submitted in the following two media: (1) a hard copy of the input file for the AIRS database; and (2) a 3.5-inch HD diskette containing the input file for the AIRS database in Microsoft Word 6.0 format.

If you have any questions regarding these reports, please call Eric J. Benner of my staff. He can be reached at (301) 415-1171.

Sincerely,

/RA/
Ledyard B. Marsh, Chief
Events Assessment, Generic Communications and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Enclosures: As stated

cc w/enclosures 1 and 2:
Mr. Lennart Carlsson
Nuclear Safety Division
Nuclear Energy Agency
Organization for Economic
Cooperation and Development
Le Seine Saint Germain
12, Boulevard des Iles
92130, Issy-les-Moulineaux, France

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INCIDENT REPORTING SYSTEM

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|---|--|-------------------------------------|
| IRS NO. | EVENT DATE 2000/02/01 | DATE RECEIVED |
| EVENT TITLE | | |
| CHANGES CONCERNING FOREIGN OWNERSHIP, CONTROL, OR DOMINATION OF NUCLEAR REACTOR LICENSEES (NRC Regulatory Issue Summary 2000-01) | | |
| COUNTRY USA | PLANT AND UNIT Generic | REACTOR TYPE (BWR or PWR) |
| INITIAL STATUS N/A | RATED POWER (MWe NET) N/A | |
| DESIGNER (WEST, GE, CE, B&W) | 1st COMMERCIAL OPERATION N/A | |

ABSTRACT

This IRS report discusses the prohibition against foreign ownership and control and, in a manner consistent with NRC Administrative Letter 96-02 ("Licensee Responsibilities Related to Financial Qualifications"), to remind addressees of their ongoing responsibility to bring to the NRC's attention changes with respect to a licensee or a parent company. This report also points out the desirability of providing the NRC advance notice of any plans for such changes so that staff resources can be allocated and NRC decisions are not unnecessarily delayed.

CHANGES CONCERNING FOREIGN OWNERSHIP, CONTROL, OR DOMINATION OF
NUCLEAR REACTOR LICENSEES (NRC Regulatory Issue Summary 2000-01)

Please refer to the dictionary of codes corresponding to each of the sections below and to the coding guidelines manual.

| | | | | |
|----|----------------------------------|--------------|-------|-------|
| 1. | Reporting Categories: | <u>1.4</u> | _____ | _____ |
| 2. | Plant Status Prior to the Event: | <u>2.0</u> | _____ | _____ |
| 3. | Failed/Affected Systems: | <u>3.Z</u> | _____ | _____ |
| 4. | Failed/Affected Components: | <u>4.0</u> | _____ | _____ |
| 5. | Cause of the Event: | <u>5.6.1</u> | _____ | _____ |
| | | | _____ | _____ |
| 6. | Effects on Operation: | <u>6.0</u> | _____ | _____ |
| 7. | Characteristics of the Incident: | <u>7.0</u> | _____ | _____ |
| 8. | Nature of Failure or Error: | <u>8.0</u> | _____ | _____ |
| 9. | Nature of Recovery Actions: | <u>9.0</u> | _____ | _____ |

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555-0001

February 1, 2000

**NRC REGULATORY ISSUE SUMMARY 2000-01
CHANGES CONCERNING FOREIGN OWNERSHIP, CONTROL, OR
DOMINATION OF NUCLEAR REACTOR LICENSEES**

Addressees

All holders of operating licenses for nuclear reactors.

Intent

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to remind addressees of the prohibition against foreign ownership and control and, in a manner consistent with NRC Administrative Letter 96-02 ("Licensee Responsibilities Related to Financial Qualifications"), to remind addressees of their ongoing responsibility to bring to the NRC's attention changes with respect to a licensee or a parent company. This RIS also points out the desirability of providing the NRC advance notice of any plans for such changes so that staff resources can be allocated and NRC decisions are not unnecessarily delayed. This RIS does not transmit or imply any new or changed requirement or staff positions. The submittal of advance notice of your planning in this area is strictly voluntary; therefore, no specific action or written response is required.

Background Information

The NRC's final Standard Review Plan (SRP) on Foreign Ownership, Control, or Domination was approved by the Commission on August 31, 1999. The SRP contains the review procedures used by the staff to evaluate applications for the issuance or transfer of control of a production or utilization facility license in light of the prohibitions in Sections 103 d. and 104 d. of the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR 50.38 against issuing such licenses to aliens or entities that the Commission "knows or has reason to believe" are owned, controlled, or dominated by foreign interests. Although addressees may be generally aware of such prohibitions, the NRC believes that it is appropriate to issue a reminder because of the recent increased interest foreign entities have shown in ownership of U.S. utilities with nuclear reactors.

Addressees should be aware of changes with respect to foreign ownership, control, or domination in ways that include, but are not limited to the following: (1) a license holder becomes aware of changes in foreign ownership or control of its company or of its parent company, for example, by receiving Securities and Exchange Commission Schedules 13D or

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13G indicating such changes; (2) a license holder, or its parent company, plans to merge with or be acquired by an entity that is owned, controlled, or dominated by foreign interests; or (3) a license holder's Board of Directors becomes controlled or dominated by board members who are not U.S. citizens.

Summary of Issue

This RIS reminds addressees of the prohibition against foreign ownership, control, or domination of domestic reactor facilities and reminds addressees of their ongoing responsibility to bring to the NRC's attention changes with respect to a licensee or a parent company.

Federal Register Notification

A notice of opportunity for public comment was not published in the *Federal Register* because this RIS is informational and pertains to a matter that was open to public comment during its promulgation. In this regard, an earlier interim version of the SRP on Foreign Ownership, Control, or Domination was published in the *Federal Register* on March 2, 1999 (64 FR 10166), for public comment.

If there are any questions about this matter, please contact one of the persons listed below or the appropriate Office of Nuclear Reactor Regulation project manager for a specific nuclear reactor.

/RA/

David B. Matthews, Director
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Technical Contacts: Robert S. Wood
301-415-1255
E-mail: rsw1@nrc.gov

Alex F. McKeigney
301-415-1221
E-mail: axm1@nrc.gov

INCIDENT REPORTING SYSTEM

| | | |
|---|--|-------------------------------------|
| IRS NO. | EVENT DATE 2000/02/15 | DATE RECEIVED |
| EVENT TITLE CLOSURE OF GENERIC SAFETY ISSUE 23, REACTOR COOLANT PUMP SEAL FAILURE (NRC Regulatory Issue Summary 2000-02) | | |
| COUNTRY USA | PLANT AND UNIT Generic | REACTOR TYPE (BWR or PWR) |
| INITIAL STATUS N/A | RATED POWER (MWe NET) N/A | |
| DESIGNER (WEST, GE, CE, B&W) | 1st COMMERCIAL OPERATION N/A | |

ABSTRACT

This IRS report discusses the NRC staff's closure of Generic Safety Issue 23 (GSI-23), "Reactor Coolant Pump Seal Failure." GSI-23 was identified in 1980 as a result of staff concerns about reactor coolant pump (RCP) seal failure, that is, seal degradation leading to a significant unisolable loss of reactor coolant, at pressurized-water reactor (PWR) facilities. The staff has concluded that no further action on the part of licensees is necessary regarding plant-specific station blackout coping analyses to address RCP seal failure concerns. However, the staff will continue to pursue plant-specific risk analysis of the loss of component cooling water/service water systems to assess this contributor to RCP seal failure risk.

CLOSURE OF GENERIC SAFETY ISSUE 23, REACTOR COOLANT PUMP SEAL FAILURE
(NRC Regulatory Issue Summary 2000-02)

Please refer to the dictionary of codes corresponding to each of the sections below and to the coding guidelines manual.

| | | | | |
|----|----------------------------------|--------------|-------|-------|
| 1. | Reporting Categories: | <u>1.4</u> | _____ | _____ |
| 2. | Plant Status Prior to the Event: | <u>2.0</u> | _____ | _____ |
| 3. | Failed/Affected Systems: | <u>3.AE</u> | _____ | _____ |
| 4. | Failed/Affected Components: | <u>4.2.1</u> | _____ | _____ |
| 5. | Cause of the Event: | <u>5.1.0</u> | _____ | _____ |
| | | | _____ | _____ |
| 6. | Effects on Operation: | <u>6.0</u> | _____ | _____ |
| 7. | Characteristics of the Incident: | <u>7.2</u> | _____ | _____ |
| 8. | Nature of Failure or Error: | <u>8.3</u> | _____ | _____ |
| 9. | Nature of Recovery Actions: | <u>9.0</u> | _____ | _____ |

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555-0001

February 15, 2000

**NRC REGULATORY ISSUE SUMMARY 2000-02
CLOSURE OF GENERIC SAFETY ISSUE 23, REACTOR COOLANT
PUMP SEAL FAILURE**

Addressees

All holders of operating licenses for nuclear power reactors, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

Intent

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to notify nuclear power reactor licensees about the staff's closure of Generic Safety Issue 23 (GSI-23), "Reactor Coolant Pump Seal Failure." This RIS transmits no new requirements, and no action or written response is requested.

Background Information

GSI-23 was identified in 1980 as a result of staff concerns about reactor coolant pump (RCP) seal failure, that is, seal degradation leading to a significant unisolable loss of reactor coolant, at pressurized-water reactor (PWR) facilities. The scope of GSI-23 does not include boiling-water reactors (BWRs) because operating experience and analysis indicate that seal failures in BWRs result in smaller leak rates than seal failures in PWRs. Additionally, seal failures in BWRs may be mitigated by the recirculation loop isolation valves, and the reactor coolant makeup capability of the reactor core isolation cooling system, the high-pressure coolant injection system, and the feedwater system is greater in BWRs than is the capability of comparable makeup systems in PWRs. There are only two isolation condenser BWRs that do not have independently powered emergency makeup systems; however, the particular type of pump seal that is used in both of these BWR plants has been successfully tested under station blackout (SBO) conditions and showed minimal leakage. The NRC considers the risk from BWR recirculation pump seal failure to be low, and, therefore, GSI-23 deals only with PWRs.

The RCP seal failure issue was originally prioritized as a high-priority issue on the basis of the frequency with which RCP seal failures occurred during normal operation from the mid-1970s to the early 1980s. The actual, normal operational RCP seal failure frequency at that time exceeded the small-break loss-of-coolant accident (LOCA) frequency assumed in the WASH-1400 study by an order of magnitude. The normal operational seal failure rate has since been significantly reduced through improvements in design and operation of RCP seals.

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A potential cause of RCP seal failure is the loss of all seal cooling as a result of SBO, a loss of component cooling water (CCW), or a loss of service water (SW). As described in NUREG-0933, "A Prioritization of Generic Safety Issues," the scope of GSI-23 originally included RCP seal failures caused by SBO. The scope of GSI-23 was expanded to include consideration of GSI-65, "Probability of Core-Melt Due to Component Cooling Water System Failures," and GSI-153, "Loss of Essential Service Water in LWRs." These additions expanded the scope to include the loss of all seal cooling from loss of CCW and loss of SW.

By 1994, the staff produced a large body of work leading up to a proposed resolution of GSI-23 and a draft rule on loss of RCP seal cooling. This work addressed the degradation of RCP polymers, the conditions under which polymer seals could experience extrusion, and the effects of loss of cooling conditions on the primary hydraulic seals. Additionally, this work addressed the conditions under which hydraulic seals are likely to become unstable. In SECY-94-225, dated August 26, 1994, a draft rule was proposed for public comment to resolve GSI-23 (Reference 1). In a staff requirements memorandum (SRM) dated March 31, 1995, the Commission disapproved issuance of the draft proposed rule for public comment stating, among other things, that there was a wide range of plant-specific considerations for PWRs, some of which would result in the expending of excessive resources without a commensurate benefit in safety (Reference 2). The SRM further noted that some licensees were planning to address the RCP seal failure concern and to make other associated improvements under their individual plant examination program.

Summary of Issue

Following the Commission's decision, the staff conducted an additional study to determine whether generic, cost-beneficial safety enhancements were appropriate to address GSI-23. The staff has completed its study and has concluded that no additional generic requirements should be proposed and licensees should not be required to revise the current deterministic SBO coping analysis assumptions. Therefore, the staff decided to close GSI-23. The staff has documented the results of its study in a closure memorandum from the Director of the Office of Nuclear Regulatory Research to the Executive Director for Operations, dated November 8, 1999 (Reference 3). The staff's decision to close GSI-23 is based on the following considerations: (1) the Commission's decision not to proceed with rulemaking; (2) the plant-specific nature of LOCA risk induced by RCP seal failure; (3) the voluntary industry initiatives to implement corrective measures related to RCP seal failure, including the use of improved O-ring polymer material in Westinghouse seals; (4) the implementation of 10 CFR 50.63, the SBO rule, which has reduced the likelihood of RCP seal failure induced LOCA in certain plants by the addition of alternate power sources; (5) the implementation of 10 CFR 50.65, the maintenance rule, which has reduced the likelihood of a loss of component cooling water and essential service water systems; and (6) improved RCP seal performance.

On the basis of the closure memorandum of November 8, 1999, the staff has concluded that no further action on the part of licensees is necessary regarding plant-specific SBO coping analyses to address RCP seal failure concerns. However, the staff will continue to pursue plant-specific risk analysis of the loss of CCW/SW systems to assess this contributor to RCP seal failure risk. The bases for the staff's conclusion, the studies performed by the staff, planned future actions, and the development of improved seal failure models are discussed in

detail in the closure memorandum. The closure memorandum also includes additional discussion of background information and includes a summary list of references for the major studies on RCP seal performance.

Backfit Discussion

This RIS requests no action or written response and is, therefore, not a backfit under 10 CFR 50.109. Consequently, the staff did not perform a backfit analysis.

Federal Register Notification

A notice of opportunity for public comment was not published in the *Federal Register* because this RIS is informational, and the public was afforded opportunities to comment while the issue was being studied.

If there are any questions about this matter, please contact the person listed below, or the appropriate Office of Nuclear Reactor Regulation project manager for a specific nuclear power plant.

References

1. Memorandum from A. C. Thadani to W. D. Travers, "Closeout of Generic Safety Issue 23, Reactor Coolant Pump Seal Failure," dated November 8, 1999 (Accession Number ML993370509).
2. SECY-94-225, "Issuance of Proposed Rulemaking Package on GSI-23, Reactor Coolant Pump Seal Failure," dated August 26, 1994 (Accession Number 9504140302).
3. Memorandum from J. C. Hoyle to J. M. Taylor, "SECY-94-225, Issuance of Proposed Rulemaking Package on GSI-23, Reactor Coolant Pump Seal Failure," dated March 31, 1995 (Accession Number 9504140300).

/RA/

David B. Matthews, Director
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Technical Contact: Christopher P. Jackson, NRR
301-415-2947
E-mail: cpj@nrc.gov

Jerry E. Jackson, RES
301-415-6656
E-mail: jej@nrc.gov