

FR 9990001



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, D.C. 20555-0001  
January 6, 2000

MEMORANDUM TO: ACRS Members  
FROM: *Noel Dudley*  
Noel Dudley, Senior Staff Engineer  
SUBJECT: PROPOSED FINAL AMENDMENT TO 10 CFR 50.72 AND 50.73  
REGARDING REPORTING REQUIREMENTS

The ACRS is scheduled to hear a briefing from the staff and the Nuclear Energy Institute (NEI) at the February 3–5, 2000 ACRS meeting, concerning the proposed final amendment to 10 CFR 50.72, "Immediate notification requirements for operating nuclear power reactors," and 50.73, "Licensee event reporting system." The objectives of the proposed amendment include:

- To better align the reporting requirements with the NRC's reporting needs.
- Reduce the reporting burden, consistent with the NRC's reporting needs.
- To clarify the reporting requirements where needed.

The staff met with the industry and other stakeholders during several workshops and meeting to discuss the proposed amendment. NEI established a working group of over 24 utility employees to evaluate the proposed amendment changes and to discuss the changes with the staff. The meetings I attended were productive and the contents of the proposed amendment were well understood by the stakeholders.

The ACRS reviewed the proposed amendment during its March 10–13, 1999 meeting, and issued a letter [Attachment 1] to the Executive Director for Operations (EDO) with the following conclusions and recommendations.

1. Issue the proposed amendment for public comment.
2. Eliminate the requirement for reporting late surveillance tests by amending the rule and not by revising the associated regulatory guide.
3. Eliminate the requirement to report an unanalyzed condition that compromises plant safety because such a condition would be reported in accordance with other requirements.
4. The staff should comprehensively examine the NRC reporting requirements to ensure that no unnecessary duplications or inconsistencies exist.
5. Plant-specific lists of risk-significant systems should be developed. These lists should not be included in the rule.

The EDO responded to the ACRS recommendations in a letter dated April 19, 1999 [Attachment 2]. The staff agreed to consider all the ACRS recommendations except for the

elimination of the requirement to report unanalyzed conditions. After the ACRS briefing, the staff identified several conditions for which this criterion is needed. After further consideration, the staff decided against adding the requirement for developing plant-specific lists of safety-significant systems.

NEI believes that the proposed changes to 10 CFR 50.72 and 50.73 meet the staff's stated objectives and that the extensive use of workshops provided a valuable testing ground. NEI's main concern is the addition of the section 50.73(a)(2)(ii)(C) requirement for reporting degraded components. It believes that the requirement lacks clarity, is ambiguous, and is an unwarranted backfit. The NEI letter concerning its position is provided as Attachment 3. The Staff Requirements Memorandum [Attachment 4] issued on June 15, 1999, anticipated the NEI concern.

The staff attempted to address NEI's concern by adding clarifying words to the proposed new criterion for reporting degraded components. The staff wants licensees to report degraded conditions of safety related equipment that may be precursors of common mode failures throughout the industry.

The staff issued the latest version of the proposed amendment to 10 CFR 50.72 and 50.73 for Office concurrence on December 30, 1999. The staff plans to provide the ACRS a copy of the proposed final amendment after reconciling any Office comments. The attached concurrence package [Attachment 5] includes a summary of the noteworthy issues, a draft Commission paper, and a marked up copy of the proposed revision 2 to NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73.

Attachments:

1. Letter dated March 23, 1999, from Dana A. Powers, Chairman, ACRS, to William D. Travers, Executive Director for Operations, NRC, Subject: Proposed Amendment to 10 CFR 50.72, Immediate Notification and 50.73, Licensee Event Reporting System.
2. Letter dated April 19, 1999, from William D. Travers, Executive Director for Operation, NRC, to Dana A. Powers, Chairman, ACRS, Subject: Proposed Rulemaking to Modify the Reactor Event Reporting Requirements in 10 CFR 50.72 and 50.73.
3. Letter dated September 17, 1999, from James W. Davis, NEI, to the Secretary of the NRC, Subject Proposed Rule for Reporting Requirements for Nuclear Power Reactors.
4. Memorandum dated June 15, 1999, from Annette Vietti-Cook, Secretary, NRC, to William D. Travers, Executive Director for Operations, Subject: Staff Requirements - SECY-99-119 - Rulemaking to Modify the Event Reporting Requirements for Power Reactors in 10 CFR 50.72 and 50.73.
5. Memorandum dated December 30, 1999, from David B. Matthews, NRR, to NRC Office Directors, Subject: Review and Comments on Commission Paper Entitled "Rulemaking to Modify the Event Reporting Requirements for Power Reactors in 10 CFR 50.72 and 50.73."

cc via e-mail w/o att:

J. Larkins  
H. Larson  
S. Duraiswamy  
ACRS Fellows and Staff



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, D. C. 20555

ATTACHMENT 1

March 23, 1999

Dr. William D. Travers  
Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Dear Dr. Travers:

**SUBJECT: PROPOSED AMENDMENT TO 10 CFR 50.72, IMMEDIATE NOTIFICATION  
AND 50.73, LICENSEE EVENT REPORTING SYSTEM**

During the 460<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards, March 10-13, 1999, we reviewed the proposed amendment to 10 CFR 50.72 and 50.73. During our review, we had the benefit of discussions with representatives of the NRC staff and the Nuclear Energy Institute (NEI), and of the document referenced.

**CONCLUSIONS AND RECOMMENDATIONS**

- The proposed amendment is a significant improvement over the current rule and should be issued for public comment.
- As noted by the staff, reports of equipment surveillance tests that are performed late are not needed provided that the equipment passes the test. The staff should amend the rule to this effect and not just revise the associated regulatory guide.
- We endorse the staff proposal to eliminate the requirement to report an unanalyzed condition that compromises plant safety because such a condition would be reported in accordance with other requirements.
- The staff should examine comprehensively the NRC reporting requirements to ensure that no unnecessary duplications or inconsistencies exist.
- We fully support the staff's position that licensees should report the actuation of risk-significant systems. Lists of such systems should be plant-specific and should be developed on the basis of probabilistic risk assessment (PRA) insights and individual plant designs. These lists should not be included in the rule.

## DISCUSSION

While remaining consistent with the agency's reporting needs, the proposed amendment would reduce the reporting burden on licensees by modifying or eliminating requirements that do not provide needed data or that require data which are available through other reporting requirements. In the case of licensee event reports (LERs), extending the reporting due date from 30 to 60 days should enable licensees to complete a root-cause analysis and develop appropriate corrective actions. This change alone would reduce the number of supplemental LERs and thereby reduce the burden on both the NRC staff and licensees.

The staff has indicated that reports on events other than those classified as emergencies would be made within 8 hours. This class of reports would capture events where NRC actions may be required within the next 24 hours, such as initiating a special inspection or contacting a licensee to obtain a better understanding of the event. An advantage of this change is that it provides licensees the opportunity to submit a more detailed description of the event.

The staff has proposed eliminating the requirement to report an unanalyzed condition that significantly compromises plant safety because such a condition would be reported in accordance with other requirements. We agree that this requirement should be dropped.

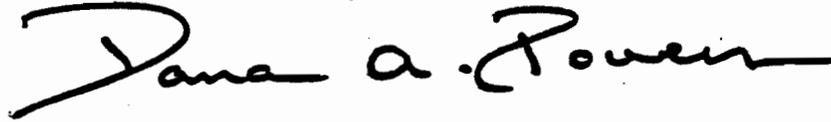
The staff has proposed eliminating reports about equipment surveillance tests that are performed late, provided that the equipment passes the test when it is performed. This is an improvement to the rule because these reports are not significant since the equipment remains operable during the period of time involved. The NRC's responses to excessively late surveillance testing and to repeated instances of late surveillance testing are covered by other regulations. The staff should amend the rule to effect this proposed change instead of revising the associated regulatory guide.

Reporting requirements for safety system actuations would be changed. Instead of relying on the term "engineered safety feature," the rule would contain a list of specific risk-significant systems. The staff has developed such a list utilizing insights from a small sample of representative PRAs consisting of three pressurized water reactors and two boiling water reactors. NEI noted that the proposed list would result in new reporting requirements for some licensees. We fully support the staff's position that licensees should report the actuation of risk-significant systems. Plant-specific lists of such systems should be developed on the basis of PRA insights and individual plant designs. These lists should not be included in the rule. The stakeholders' workshop being planned by the NRC staff will provide an opportunity to discuss how to develop and document these lists.

The changes contained in the proposed amendment may affect reporting requirements in other regulations. The staff has not completed a systematic review of all the regulations that have reporting requirements and has not assessed whether the various requirements satisfy the needs of the agency. For example, the staff must resolve the difference between the proposed 8 hour reporting requirement and the existing 4 hour reporting requirement in 10 CFR Part 20 regarding radioactive releases.

We have no objection to issuing the proposed amendment for public comment and would like the opportunity to review the proposed final amendment after reconciliation of public comments.

Sincerely,

A handwritten signature in black ink that reads "Dana A. Powers". The signature is written in a cursive style with a large, sweeping initial "D".

Dana A. Powers  
Chairman

**Reference:**

Memorandum dated February 19, 1999, from David B. Matthews, Office of Nuclear Reactor Regulation, to NRC Office Directors and Regional Administrators, Subject: Office Review and Concurrence on a Proposed Rule to Modify the Event Reporting Requirements for Power Reactors in 10 CFR 50.72 and 50.73.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

ATTACHMENT 2

April 19, 1999

Dr. Dana A. Powers, Chairman  
Advisory Committee on Reactor Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

**SUBJECT: PROPOSED RULEMAKING TO MODIFY THE REACTOR EVENT  
REPORTING REQUIREMENTS IN 10 CFR 50.72 AND 50.73**

Dear Dr. Powers:

This is to provide the staff's response to the recommendations of the Advisory Committee on Reactor Safeguards (ACRS) on the subject rulemaking. The Committee recommendations were provided in your letter of March 23, 1999. The staff's responses are provided below.

**1. ACRS Recommendation:**

The proposed amendment is a significant improvement over the current rule and should be issued for public comment.

**Response:**

The staff agrees and will recommend publication to the Commission.

**2. ACRS Recommendation:**

As noted by the staff, reports of equipment surveillance tests that are performed late are not needed provided that the equipment passes the test. The staff should amend the rule to this effect and not just revise the associated regulatory guide.

**Response:**

The staff agrees and the proposed rule would include this change.

**3. ACRS Recommendation:**

We endorse the staff proposal to eliminate the requirement to report an unanalyzed condition that compromises plant safety because such a condition would be reported in accordance with other requirements.

14

**Response:**

When the staff briefed the ACRS, the draft rule would have eliminated the requirement to report an unanalyzed condition that significantly compromises plant safety on the grounds that other criteria would capture events of interest. However, subsequent to the ACRS briefing, the staff reconsidered this approach and identified several types of reports for which this criterion is needed. Therefore, the proposed rules would retain this criterion (in a slightly modified form). Examples of events that would be reportable under this criterion would include:

- a. The accumulation of voids that could inhibit the ability to adequately remove heat from the reactor core, particularly under natural circulation conditions.
- b. Voiding in instrument lines that results in an erroneous indication causing the operator to misunderstand the true condition of the plant.
- c. Discovery that a system that is required to meet the single failure criterion does not do so.
- d. Discovery that fire barriers are missing, such that there would be no safe shutdown train available in case of a fire.

**4. ACRS Recommendation:**

The staff should comprehensively examine the NRC reporting requirements to ensure that no unnecessary duplications or inconsistencies exist.

**Response:**

Relative to the proposed amendments to 10 CFR 50.72 and 50.73, the staff has reviewed other NRC reporting requirements and has not identified any actual conflicts or needless duplications, aside from the instances which were identified at the ACRS briefing. For these instances, resolutions will be proposed in the rulemaking to modify 10 CFR 50.72 and 50.73.

The staff will consider more subtle questions of consistency in connection with another effort. In the Advance Notice of Proposed Rulemaking (ANPR) on 10 CFR 50.72 and 50.73, as well as the recent public workshops, the NRC requested public comments to identify and propose changes to other reactor reporting requirements (beyond 10 CFR 50.72 and 50.73) that are potential candidates for modifying to a simplified, less burdensome, more risk-informed approach. In SECY-99-022, the staff discussed the public comment on this matter. The Commission has directed that the staff provide, by May 31, 1999, a schedule and plan of action for revising the reporting rules listed in SECY-99-022. Most of these areas include consistency questions. For example, one of the public comments recommended that the 4-hour and 30-day time limits for reporting under 10 CFR 72.75 be relaxed to 8 hours and 60 days, respectively, similar to what is being proposed under 10 CFR 50.72 and 50.73.

15

5. ACRS Recommendation:

We fully support the staff's position that licensees should report the actuation of risk-significant systems. Lists of such systems should be plant-specific and should be developed on the basis of probabilistic risk assessment (PRA) insights and individual plant designs. These lists should not be included in the rule.

Response:

The rulemaking package will be revised to specifically invite public comment on alternatives to the proposed rule, including the approach recommended by the Committee.

Please let me know if the Committee has any further questions or comments on the proposed rule.

Sincerely,



William D. Travers  
Executive Director  
for Operations

cc: Chairman Jackson  
Commissioner Dicus  
Commissioner Diaz  
Commissioner McGaffigan  
Commissioner Merrifield  
SECY

**James W. Davis**  
DIRECTOR  
OPERATIONS DEPARTMENT,  
NUCLEAR GENERATION

September 17, 1999

Secretary  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

ATTN: Rulemaking and Adjudication Staff

**SUBJECT:** Proposed Rule for Reporting Requirements for Nuclear Power  
Reactors -- 64 *Federal Register* 36291 -- July 6, 1999

**PROJECT NUMBER: 689**

These comments are submitted on behalf of the nuclear power industry by the Nuclear Energy Institute (NEI)<sup>1</sup> in response to the *Federal Register* notice(s) concerning proposed rulemaking on Reporting Requirements for Nuclear Power Reactors (64 *Federal Register* 36291 of July 6, 1999).

In general, we believe that the proposed changes to 10 CFR 50.72 and 50.73 meet the stated objectives to better align reporting requirements with needs, reduce burden where there is no safety significance, and provide greater clarity to reporting requirements. Extensive use of workshops and tabletop exercises during the rulemaking process has provided a valuable testing ground for the proposed revisions.

We have two areas of significant concern.

First, the last minute addition of a requirement to report degraded components, section 50.73(a)(2)(ii)(C), does not meet the stated objectives of the rule change and should be deleted. This requirement to report items that are not safety significant is a data collection exercise that runs counter to the intent of the event reporting rule. If this recent addition had been subjected to the same review and discussion

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<sup>1</sup> NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including regulatory aspects of generic operational and technical issues. NEI's Members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy issue.

Secretary  
September 17, 1999  
Page 2

process as the rest of the rule, the added burden and lack of clarity would have been clearly evident to the staff. Additionally, we believe that collecting data on "degraded" components, as a part of this rule, is an unwarranted backfit. The needed component performance information can be extracted from other existing reports and databases.

The lack of clarity in this new requirement is particularly alarming. This attempt to capture components that are degraded, but not necessarily enough so as to render a system inoperable, is subject to widely varying levels of interpretation. Additionally, the ambiguity of this provision would likely increase the number of required LERs of little safety significance far beyond those that were submitted due to being "outside the design basis of the plant," or any of the other criterion. This would further add unnecessary burden to licensees.

Second, the proposed rule contains a detailed list of engineered safety feature (ESF) systems for reporting. We do not support the proposed revisions which specify the systems for which reporting is required. An all-inclusive list of systems in a regulation is inappropriate. In the interest of maintaining clarity and simplicity, the best approach would be to select Option 3 and return to the pre-1998 situation whereby reporting would be required for the actuation of "any ESF" as is defined in each facility's FSAR. Ultimately, as part of the initiative to risk-informed 10 CFR Part 50, the possibility of using a plant-specific, risk-informed list should be explored. This would include only those systems that were significant to safety. Additional effort and discussion are required before a risk-informed approach could be considered. In the short-term, we should continue with the longstanding practice of relying on each facility's FSAR.

Detailed comments and specific proposals are enclosed. We would be willing to meet with the NRC staff to further discuss these comments.

We appreciate the opportunity to comment on this proposed rule. Should you have further questions, please contact Bob Post of the NEI staff at 202-739-8115.

Sincerely,

 James W. Davis

Enclosure

June 15, 1999

MEMORANDUM TO: William D. Travers  
Executive Director for Operations

FROM: Annette Vietti-Cook, Secretary /s/

SUBJECT: STAFF REQUIREMENTS - SECY-99-119 -  
RULEMAKING TO MODIFY THE EVENT REPORTING  
REQUIREMENTS FOR POWER REACTORS IN 10 CFR  
50.72 AND 50.73

The Commission has approved the staff's recommendation to publish the proposed rule to modify the event reporting requirements for power reactors in 10 CFR 50.72 and 50.73 in the Federal Register for a 75-day public comment period.

(EDO)

(SECY Suspense: 6/25/  
99)

The staff should specifically invite public comment and determine the need for reports on historical problems. The staff should also request public comment on applying the three-year limit on written reports to all of the written report requirements for consistency.

The staff should specifically invite public comment on the new requirement to report component problems that significantly degrade the ability to fulfill a safety function and that could reasonably be expected to affect other similar components in the plant. While recognizing members of the staff desire to capture significant degradation with generic implications, this change attempts to define a new threshold for reporting that could be subject to varying interpretations by licensees and inspectors.

cc: Chairman Jackson  
Commissioner Dicus  
Commissioner Diaz  
Commissioner McGaffigan



**PREDECISIONAL**  
UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

ATTACHMENT 5

December 30, 1999

MEMORANDUM TO: Brian W. Sheron, Associate Director, ADPT, NRR  
Frank J. Congel, Director, IRO  
Bruce A. Boger, Director, DIPM, NRR  
Jacqueline E. Silber, Director, PMAS, NRR  
William F. Kane, Director, NMSS  
Dennis K. Rathbun, Director, OCA  
William M. Beecher, Director, OPA  
Jesse L. Funches, Chief Financial Officer  
Stuart Reiter, Acting Chief Information Officer  
Karen D. Cyr, General Counsel  
R. William Borchardt, Director, OE  
Michael L. Springer, Director, ADM  
Ashok C. Thadani, Director, RES

FROM: David B. Matthews, Director, DRIP, NRR

A handwritten signature in black ink, appearing to read "D B Matthews".

SUBJECT: REVIEW AND COMMENTS ON COMMISSION PAPER ENTITLED  
"RULEMAKING TO MODIFY THE EVENT REPORTING REQUIRE-  
MENTS FOR POWER REACTORS IN 10 CFR 50.72 AND 50.73"

Your concurrence on the attached subject Commission Paper and final rule package (Attachments 2, 3 and 4) is requested within two weeks of the date of this memorandum. We are scheduled to provide the rulemaking package to the ACRS in mid-January 2000 to support a briefing scheduled for February 3, 2000.

Background.

The proposed rule was published on July 6, 1999, and a public meeting was held on August 3, 1999, to facilitate public comments, which were due on September 20, 1999.

Earlier drafts of the final rule (Federal Register notice) and event reporting guidelines (NUREG-1022, Revision 2) were previously distributed for review and comment to those listed below under the heading "Cognizant Individuals." Comments received have been incorporated as appropriate. The noteworthy issues are detailed in Attachment 1.

The following is a summary of this request.

1. Title. Rulemaking to Modify the Event Reporting Requirements for Power Reactors in 10 CFR 50.72 and 50.73.
2. NRR Task Leader. Dennis P. Allison (415-1178).
3. Cognizant Individuals. Earlier drafts were provided for review and comment to the following personnel:

Phillip Harrison, ADM	Robert Dennig, NRR-DRIP-RTSB
Michael Lesar, ADM	Gary Holahan, NRR-DSSA
Herbert Parcover, CIO	Steven Long, NRR-DSSA-SPSB
Brenda Shelton, CIO	Thomas Dietz, NRR-PMAS-PPRB
Joseph Giitter, IRO	Terrence Reis, OE
John MacKinnon, IRO	Norman St. Amour, OGC
John Jolicoeur, IRO	Geary Mizuno, OGC
Steve Sandin, IRO	Stuart Treby, OGC
Henry Bailey, IRO	Joseph Rutberg, OGC
Richard Jolliffe, IRO	William R. Jones, RES
Kevin Ramsey, NMSS-IMNS-MSIB	Steven Mays, RES-DRAA-OERAB
Lawrence Kokajko, NMSS-IMNS-RGB	Patrick Baranowsky, RES-DRAA-OERAB
Clark Prichard, NMSS-IMNS-RGB	Marcel Harper, RES-DRAA-OERAB
Jack R. Strosnider, NRR-DE	Dale Yeilding, RES-DRAA-OERAB
James Andersen, NRR-DE-EMCB	Bennett Brady, RES-DRAA-OERAB
David Fischer, NRR-DE-EMEB	Julius Persensky, RES-DSARE-REAHFB
Thomas Scarbrough, NRR-DE-EMEB	Paul Lewis, RES-DSARE-REAHFB
Michael Johnson, NRR-DIPM-IIPB	David Chawaga, RI
Donald Hickman, NRR-DIPM-IIPB	A. Randolph Blough, RI
Clare Goodman, NRR-DIPM-IOLB	Gordon Hunegs, RI
Richard Eckenrode, NRR-DIPM-IOLB	Charles Ogle, RII
Roger Pedersen, NRR-DIPM-IOLB	Robert Carroll, RII
Thomas Essig, NRR-DIPM-IOLB	James Caldwell, RIII
Melinda Malloy, NRR-DRIP-RGEB	John Jacobson, RIII
Cynthia Carpenter, NRR-DRIP-RGEB	Marc Dapas, RIII
Eileen McKenna, NRR-DRIP-RGEB	Kenneth Riemer, RIII
Stewart Magruder, NRR-DRIP-RGEB	Eric Duncan, RIII
John Zwolinski, NRR-DLPM	Ron A Kopriva, RIV
David Skeen, NRR-DRIP-REXB	Mike Runyan, RIV

4. Requested Action. Review and concurrence in Commission Paper.
5. Requested Completion Date. Two weeks after the date of this memorandum.
6. Resources. Resources to implement this final rule are included in the FY00 budget. It is not expected that meaningful savings of NRC resources will occur as a result of the revised reporting requirements.
7. Positions: The positions taken were discussed with the Director, NRR at an ET briefing on December 15, 1999, and are detailed in Attachment 1.

If you have any questions or comments, please contact Dennis Allison, (301) 415-1178, e-mail DPA, mail stop O 11-E-1. Please provide your concurrence by telephone, e-mail, memo, or a marked-up concurrence page.

Attachments:

1. Noteworthy Issues
2. Draft Commission paper
- \* 3. Draft final rule (Federal Register notice)
4. Draft final event reporting guidelines  
(NUREG-1022, Rev. 2)

cc: w/attachment

H. Bell, IG

J. Larkins, ACRS

H. Miller, ORA, Region I

L. Reyes, ORA, Region II

J. Dyer, ORA, Region III

E. Merschoff, ORA, Region IV



## NOTEWORTHY ISSUES

### Outside the Design Basis of the Plant / Degraded Components.

In the proposed rule, we recommended deleting the requirement to report when the plant is in a condition outside the design basis of the plant. A condition outside the design basis of the plant would still be reportable if it is significant enough to qualify under other criteria, such as:

- Plant in an unanalyzed condition that significantly degraded plant safety.
- Event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to shut down the reactor, remove residual heat, control the release of radioactive material, or mitigate an accident.
- Condition or operation prohibited by the plant's technical specifications.
- Independent trains or channels inoperable due to a single cause or condition.
- Principal safety barrier seriously degraded.
- A proposed new criterion - component in a degraded or nonconforming condition, such that the ability to perform its specified safety function is significantly degraded and the condition could reasonably be expected to apply to other similar components in the plant.

The stated purpose of the proposed new criterion was to ensure continued reporting of design basis or other discrepancies if the capability to perform a specified safety function was significantly degraded and the condition had generic implications. Industry commenters objected strongly, indicating that the proposed new criterion would be:

- Unclear and subject to widely varying interpretation.
- Overly burdensome, representing a significant increase in reporting requirements.
- Not in accordance with the stated objectives of the rulemaking.

The attached package takes the following approach:

- As was recommended in the proposed rule, the requirement to report a condition outside the design basis of the plant is deleted.
- The proposed new criterion on reporting of degraded components is modified to address the concerns raised in the comments. As modified, the criterion would capture an event or condition with the following characteristics -- the ability of independent trains or

channels to perform their specified safety functions is significantly degraded as a result of a single cause or condition that is worsening such that it is necessary to correct the cause or condition in independent trains or channels in order to avoid probable future failures.

- For this type of event, the "reporting clock" would not start until it is determined that it is necessary to correct the cause or condition in independent trains or channels in order to avoid probable future failures.

We believe that events of this type indicate a condition where the NRC needs to consider taking action to ensure the condition is addressed at other plants as appropriate.

#### Required Initial Reporting Times.

In the proposed rule we recommended that declaration of an emergency class and deviation from the technical specifications under 10 CFR 50.54(x) continue to be reportable within one hour. Other events reportable by telephone under §50.72 would be reportable within eight hours. Most commenters supported this approach, but two States and our Incident Response Organization have expressed concerns about waiting eight hours for reporting of certain events.

The attached package takes the following approach:

After reconsideration, the final rule requires 4-hour reporting for unplanned transients, if not reported in 1 hour. These are events where there may be a need for the NRC to take a reasonably prompt action, such as partially activating its response plan to monitor the course of the event. In summary, they are:

- *A valid ECCS discharge into the RCS, except when it results from and is part of a pre-planned sequence during testing or operation. Previously this was a 1-hour report.*
- *Initiation of a shutdown required by the plant's technical specifications. Previously this was a 1-hour report.*
- *A valid automatic or intentional manual scram when critical, except when it results from and is part of a pre-planned sequence during testing or operation. Previously, actuation of any ESF, including the reactor protection system (RPS), was a 4-hour report.*

*For an event related to health and safety or environmental protection that involves a news release, or notification to other government agencies, including an onsite fatality or inadvertent release of radioactively contaminated materials the final rule requires reporting within one hour after issuing the public announcement or notifying the other government agencies. These reports are needed quickly because this criterion captures events where there may be a need for the NRC to respond to heightened public concern. Such reporting is not unduly burdensome because in this case the "reporting clock" does not start until the public announcement is issued or the other government agencies are notified.*

The following criteria are deleted from §50.72:

- *A natural phenomenon or other external event that poses an actual threat to plant safety, or significantly hampers site personnel in the performance of duties necessary for safe operation.* Events of this type are captured by declaration of an emergency class, which is reportable within 1 hour.
- *An internal event that poses an actual threat to plant safety, or significantly hampers site personnel in the performance of duties necessary for safe operation, including fires, toxic gas releases, or radioactive releases.* Events of this type are captured by declaration of an emergency class, which is reportable within 1 hour.
- *An airborne radioactive release, or liquid effluent release, that exceeds specific limits.* Releases that warrant prompt notification are captured by declaration of an emergency class. Declaration of any emergency class, is reportable within 1 hour after occurrence. Releases for which there is a public announcement or notification to another agency are captured as *an event related to health and safety or environmental protection that involves a news release, or notification to other government agencies, including an onsite fatality or inadvertent release of radioactively contaminated materials.* These events are reportable within 1 hour after issuance of the public announcement or notification of other agencies.

The final rule requires 8-hour reporting for other events reportable under §50.72, if not reported in 1 hour or 4 hours. These are events where there may be a need for the NRC to take an action within about a day, such as initiating a special inspection or investigation. In summary, they are:

- *The plant including its principal safety barriers being in a seriously degraded condition, or the plant being in an unanalyzed condition that significantly degrades plant safety.*
- *A valid automatic or intentional manual actuation of any ESF, except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.*
- *An event or condition that at the time of discovery could have prevented fulfillment of the safety function of structures or systems needed to shut down the reactor, remove residual heat, control the release of radioactive material, or mitigate an accident.*
- *Transport of a radioactively contaminated person to an offsite medical facility.*
- *A major loss of emergency assessment capability, offsite response capability, or offsite communications capability.*
- A new criterion -- *Independent trains or channels with significantly degraded ability to perform their specified safety functions as a result of a single cause or condition that is worsening such that it is necessary to correct the cause or condition in independent trains or channels in order to avoid probable future failures.*

In the final rule, written licensee event reports (LERs) are due within 60 days after discovery of a reportable event or condition, instead of within 30 days as is currently required. This is in agreement with the proposed rule. This change does not imply that licensees should take

longer than they previously did to develop and implement corrective actions. They should continue to do so on a time scale commensurate with the significance of the issue. However, for those cases where it does take longer than 30 days to complete a root cause analysis, there would be fewer LERs that require amendment (by submitting a revised report).

#### List of Systems.

Currently, licensees are required to report actuation of "any ESF, including the RPS." In the proposed rule we recommended reporting actuation for a specific list of systems, to be provided in the rule. The stated purpose was to provide consistent reporting for actuation of a few standby systems that are highly risk-significant and eliminate reporting for events of lesser significance, such as actuation of control room ventilation systems. Most commenters opposed this approach. They recommended that each plant report actuation for only those systems that have been identified as ESFs in the FSAR. On the other hand, the ACRS recommended that, rather than placing a generic list in the rule, the list of systems be determined for each specific plant, based on risk-significance of systems at that plant.

The attached package takes the following approach:

- The proposed list of systems is withdrawn, and removed from the event reporting guidelines in NUREG-1022.
- This means we would continue to require reporting actuation of those systems that have been identified as ESFs at each plant.

Some plants do not identify their EDGs as ESFs. Some PWRs do not identify their AFW systems as ESFs. Many BWRs do not identify RCIC as an ESF. We do not believe the imposition of additional new reporting requirements, in order to ensure consistency with regard to these systems, is justified.

#### Invalid ESF Actuation.

In the proposed rule we recommended eliminating telephone notifications for invalid ESF actuations. This was proposed because spurious actuations, by themselves, are generally not significant events that the NRC needs to review in its search for safety problems. Thus, an immediate notification is not considered necessary.

In the proposed rule we also recommended retaining the requirement for a written LERs for invalid ESF actuations. Information about invalid actuations is needed to support the NRC staff's estimates of equipment reliability. Most commenters opposed any reporting of spurious ESF actuations. Among other things, they indicated that requiring a written LER is unnecessarily burdensome, considering the use of this particular information.

The attached package takes the following approach:

- As was recommended in the proposed rule, the requirement to provide a telephone notification (within 4 hours or 8 hours) for an invalid ESF actuation is eliminated.

- As also recommended in the proposed rule, the requirement to submit a written LER for these events is retained. However, in order to reduce the burden of such reporting:
  - The licensee is given the option of providing a telephone notification, which is much less costly than providing a written LER.
  - The telephone notification may be made at any time within 60 days, because the information is not needed quickly.

Entry into Technical Specification 3.0.3 or its Equivalent (TS 3.0.3).

TS 3.0.3 establishes requirements for actions to be taken when an LCO is not met and: (1) the associated actions are not met, (2) the associated actions direct entry into TS/LCO 3.0.3, or (3) no associated actions are provided. From Mode 1 (Power Operation), TS 3.0.3 typically requires initiation of plant shutdown within 1 hour to place the unit in Mode 2 (Startup) within 7 hours, Mode 3 (Hot Shutdown) within 13 hours, and Mode 4 (Cold Shutdown) within 37 hours, as applicable. The current reporting guidelines in NUREG-1022 indicate that entry into Technical Specification 3.0.3 or its equivalent for any reason is reportable as an "operation or condition prohibited by the plant's technical specifications." Most commenters recommended placing some limitations on the reportability of these events.

The attached package takes the following approach:

- Entry into TS 3.0.3 is not necessarily reportable.
- The event becomes reportable when a required shutdown is initiated.



## PRE-DECISIONAL INFORMATION

### PREPARED FOR INTERNAL COMMITTEE USE

FOR: The Commissioners

FROM: William D. Travers  
Executive Director for Operations

SUBJECT: RULEMAKING TO MODIFY THE EVENT REPORTING REQUIREMENTS FOR  
POWER REACTORS IN 10 CFR 50.72 AND 50.73

PURPOSE:

The purpose of this paper is to obtain Commission approval of a final rule to modify the event reporting requirements for power reactors in 10 CFR 50.72 and 50.73.

BACKGROUND:

An advance notice of proposed rulemaking (ANPR) was published in the *Federal Register* on July 23, 1998. Among other things, the ANPR requested public comments on several concrete proposals for modification of the event reporting rules. Public meetings were held to discuss the ANPR at NRC Headquarters on August 21, 1998, in Rosemont, Illinois on September 1, 1998, and at NRC Headquarters on November 13, 1998.

A proposed rule was published in the *Federal Register* on July 6, 1999. Concurrently, a draft of the associated event reporting guidelines (NUREG-1022, Revision 2) was made available for public comment. A public meeting was held at NRC Headquarters on August 3, 1999, to discuss the proposed rule and draft guidelines. Public comments were due on September 20, 1999. Twenty-six comment letters were received from reactor licensees and organizations of licensees. One comment letter was received from a State agency.

Contact:  
Dennis Allison, NRR/DRIP/RGEB  
(301) 415-1178

ATTACHMENT 2

## PRE-DECISIONAL INFORMATION

The Commissioners

2

### DISCUSSION:

In the final rule, the essential purposes of §50.72 are unchanged. This section provides for immediate reporting of significant events where: (1) immediate NRC action may be required to protect the public health and safety, or (2) the NRC needs timely, accurate information to respond to heightened public concern.

The essential purposes of §50.73 are also unchanged. It identifies the types of events and problems believed to be significant and useful to the NRC's effort to identify and resolve threats to public safety. It is designed to provide information needed for engineering studies of anomalies, trend analysis of occurrences, and identification of accident precursors.

The objectives of this rulemaking are as follows:

- To better align the reporting requirements with the NRC's current reporting needs.
- To reduce the reporting burden, consistent with the NRC's reporting needs.
- To clarify the reporting requirements where needed.
- Any changes should be consistent with NRC actions to improve integrated plant assessments.

The noteworthy issues are summarized below.

### Outside the Design Basis of the Plant / Degraded Components.

In the proposed rule, we recommended deleting the requirement to report when the plant is in a condition outside the design basis of the plant. A condition outside the design basis of the plant would still be reportable if it is significant enough to qualify under other criteria, such as:

- *Plant in an unanalyzed condition that significantly degraded plant safety.*
- *Event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to shut down the reactor, remove residual heat, control the release of radioactive material, or mitigate an accident.*
- *Condition or operation prohibited by the plant's technical specifications.*

## PRE-DECISIONAL INFORMATION

The Commissioners

3

- *Independent trains or channels inoperable due to a single cause or condition.*
- *Principal safety barrier seriously degraded.*
- *A proposed a new criterion - component in a degraded or nonconforming condition, such that the ability to perform its specified safety function is significantly degraded and the condition could reasonably be expected to apply to other similar components in the plant.*

The stated purpose of the proposed new criterion was to ensure continued reporting of design basis or other discrepancies if the capability to perform a specified safety function is significantly degraded and the condition has generic implications. Industry commenters objected strongly, indicating that the proposed new criterion would be:

- Unclear and subject to widely varying interpretation.
- Overly burdensome, representing a significant increase in reporting requirements.
- Not in accordance with the stated objectives of the rulemaking.

After consideration of the comments, the final rule takes the following approach:

- As indicated in the proposed rule, the requirement to report a condition outside the design basis of the plant is deleted.
- The proposed criterion is modified to require reporting when *the ability of independent trains or channels to perform their specified safety functions is significantly degraded as a result of a single cause or condition that is worsening such that it is necessary to correct the cause or condition in independent trains or channels in order to avoid probable future failures.* This is more specific than the proposed criterion.
  - Events of this type indicate a condition where the NRC needs to consider taking action to ensure the condition is addressed at other plants as appropriate.
  - For this type of event, the "reporting clock" does not start until it is determined that it is necessary to correct the cause or condition in independent trains or channels in order to avoid probable future failures.

## PRE-DECISIONAL INFORMATION

The Commissioners

4

### Required Reporting Times in §50.72.

In the proposed rule we recommended that declaration of an emergency class and deviation from the technical specifications under 10 CFR 50.54(x) continue to be reportable within 1 hour. Other events reportable by telephone under §50.72 would be reportable within 8 hours. It was recognized that there were concerns with this approach, and comments were specifically invited on several alternatives. Most commenters supported the proposed approach. However, a State agency expressed concerns about waiting 8 hours for reporting of certain events.

After consideration of the comments, the final rule takes the following approach. For *an event related to health and safety or environmental protection that involves a news release, or notification to other government agencies, including an onsite fatality or inadvertent release of radioactively contaminated materials* the final rule requires reporting within 1 hour after issuing the public announcement or notifying the other government agencies. These reports are needed promptly because they involve events where there may be a need for the NRC to respond to heightened public concern. Prompt reporting is not unduly burdensome because in this case the "reporting clock" does not start until the public announcement is issued or other government agencies are notified.

For unplanned transients, the final rule requires 4-hour reporting, if not reported in 1 hour. These are events where there may be a need for the NRC to take a reasonably prompt action, such as partially activating its response plan to monitor the course of the event. In summary, they are:

- *A valid ECCS discharge into the RCS, except when it results from and is part of a pre-planned sequence during testing or operation.* Previously this was a 1-hour report.
- *Initiation of a shutdown required by the plant's technical specifications.* Previously this was a 1-hour report.
- *A valid automatic or intentional manual scram when critical, except when it results from and is part of a pre-planned sequence during testing or operation.* Previously, actuation of any engineered safety feature (ESF), including the reactor protection system (RPS), was a 4-hour report.

Three criteria are deleted from §50.72 because they are not needed in order to obtain prompt notification of events. They are retained in §50.73, however, because they are needed in order to obtain written LERs.

- *A natural phenomenon or other external event that poses an actual threat to plant safety, or significantly hampers site personnel in the performance of duties necessary for safe operation.* Events of this type are captured by declaration of an emergency class, which is reportable within 1 hour.

## PRE-DECISIONAL INFORMATION

The Commissioners

5

- *An internal event that poses an actual threat to plant safety, or significantly hampers site personnel in the performance of duties necessary for safe operation, including fires, toxic gas releases, or radioactive releases. Events of this type are captured by declaration of an emergency class, which is reportable within 1 hour.*
- *An airborne radioactive release, or liquid effluent release, that exceeds specific limits. Releases that are large enough to warrant prompt notification are captured by declaration of an emergency class, which is reportable within 1 hour after the declaration. Releases that involve a public announcement or notification to another agency are reportable within 1 hour after the announcement or notification.*

For the remaining events reportable under §50.72, the final rule requires 8-hour reporting, if not reported in 1 hour or 4 hours. These are events where there may be a need for the NRC to take an action within about a day, such as initiating a special inspection or investigation. In summary, they are:

- *The plant including its principal safety barriers being in a seriously degraded condition, or the plant being in an unanalyzed condition that significantly degrades plant safety.*
- *A valid automatic or intentional manual actuation of any ESF, except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.*
- *An event or condition that at the time of discovery could have prevented fulfillment of the safety function of structures or systems needed to shut down the reactor, remove residual heat, control the release of radioactive material, or mitigate an accident.*
- *Transport of a radioactively contaminated person to an offsite medical facility.*
- *A major loss of emergency assessment capability, offsite response capability, or offsite communications capability.*
- *Independent trains or channels with significantly degraded ability to perform their specified safety functions as a result of a single cause or condition that is worsening such that it is necessary to correct the cause or condition in independent trains or channels in order to avoid probable future failures. This is a new criterion. In this case, the reporting clock does not start until it is determined that it is necessary to correct the cause or condition in independent trains or channels in order to avoid probable future failures.*

## PRE-DECISIONAL INFORMATION

The Commissioners

6

### List of Systems.

Currently, licensees are required to report actuation of "any ESF, including the RPS." In the proposed rule we recommended reporting actuation for a specific list of systems, to be provided in the rule. The stated purpose was to: (1) provide consistent reporting for actuation of a few standby systems that are highly risk-significant and (2) eliminate reporting for events of lesser significance, such as actuation of control room ventilation systems. Most commenters opposed this approach. They recommended that each plant report actuation for only those systems that have been identified as ESFs in that plant's Final Safety Analysis Report (FSAR). On the other hand, the ACRS recommended that, rather than placing a generic list in the rule, a list of systems be determined for each specific plant, based on risk-significance of systems at that plant.

After consideration of the comments, the final rule takes the following approach:

- The proposed rule change and list of systems is withdrawn.
- The event reporting guidelines in NUREG-1022 indicate that licensees should report actuation of those systems that have been identified as ESFs at each specific plant.

Some plants do not identify their emergency diesel generators (EDGs) as ESFs, some pressurized water reactors (PWRs) do not identify their auxiliary feed water (AFW) systems as ESFs, and many boiling water reactors (BWRs) do not identify their reactor core isolation cooling (RCIC) systems as ESFs. However, there is not an overriding need to impose additional new reporting requirements in order to ensure consistency in this regard.

### Invalid Actuation of an ESF.

In the proposed rule we recommended eliminating telephone reporting of invalid ESF actuations under §50.72. Invalid actuations, by themselves, are generally not significant events that the NRC needs to review in its efforts to identify and resolve safety problems. Thus, immediate notification is not necessary.

In the proposed rule we also recommended retaining the requirement for written LERs for invalid ESF actuations under §50.73. Information about invalid actuations is needed to support the NRC staff's estimates of equipment reliability. Most commenters opposed any reporting of invalid ESF actuations.

After consideration of the comments, the final rule takes the following approach:

- The requirement to provide a telephone notification under §50.72 for an invalid ESF actuation is eliminated.

## PRE-DECISIONAL INFORMATION

The Commissioners

7

- The requirement to report these events under §50.73 is retained. However, the licensee is given the option of providing a telephone report rather than a written LER. This is far less burdensome. In addition, the telephone notification may be made at any time within 60 days, because the information is not needed immediately.

### Entry into Technical Specification 3.0.3 or its equivalent (TS 3.0.3).

TS 3.0.3 establishes requirements for actions to be taken when an limiting condition for Operation (LCO) is not met and: (1) the associated actions are not met; (2) the associated actions direct entry into TS 3.0.3; or (3) no associated actions are provided. Typically, TS 3.0.3 requires initiation of plant shutdown within 1 hour (if the condition has not been corrected). Previously, the reporting guidelines in NUREG-1022 indicated that entry into TS 3.0.3 or its equivalent for any reason is reportable as an "operation or condition prohibited by the plant's technical specifications." Most commenters recommended placing limitations on the reportability of these events.

After consideration of the comments, the final rule takes the following approach:

- Entry into TS 3.0.3 is not necessarily reportable.
- The event becomes reportable when a required shutdown is initiated.

### RELATED PROGRAMS:

In related programs, the staff is developing revisions to the process for oversight of operating reactors, including the inspection, assessment and enforcement processes. In connection with this effort, the staff has considered the kinds of event reports that would be eliminated by the proposed rules and believes that the changes would not have a deleterious effect on the oversight process.

The final rule changes some of the requirements in Section 50.73(b) regarding the format and content of Licensee Event Reports. Recently, in a rulemaking to make miscellaneous changes to 10 CFR Part 72, format and content requirements comparable to those of Section 50.73(b) were adopted in Section 72.75(d)(2). Accordingly, when the final rule is published, the staff will consider the question of whether or not rulemaking should be initiated to make similar changes in Section 72.75(d)(2).

### RESOURCES:

Resources to implement this final rule are included in the FY 2000 budget. It is not expected that meaningful savings of NRC resources will occur as a result of fewer reports under the revised reporting requirements.

## PRE-DECISIONAL INFORMATION

The Commissioners

8

### COORDINATION:

OGC has reviewed this paper and has no legal objections. The Office of the Chief Information Officer has reviewed this paper for information technology and information management implications and concurs in it. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

The Advisory Committee on Reactor Safeguards was briefed on February 3, 2000. The Committee's recommendations are provided in Attachment 4 and the staff's responses are provided in Attachment 5.

### RECOMMENDATIONS:

That the Commission:

1. Approve the publication of the attached *Federal Register* notice that promulgates the final rule;
2. Certify that this rule, if issued, would not have a significant economic impact on a substantial number of small entities to satisfy the requirements of the Regulatory Flexibility Act, 5 U.S.C. 605(b).
3. Note that:
  - a. This rule amends information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq*). The information collection requirements for this rule will be submitted to OMB when the Commission approves the final rule. The rule will be published when OMB approval is obtained.
  - b. The Regulatory Analysis (Attachment 2) will be available in the Public Document Room.
  - c. The staff plans to issue regulatory guidance (Attachment 3).
  - d. The Chief Counsel for Advocacy of the Small Business Administration will be informed of the certification regarding economic impact on small entities and the reasons for it as required by the Regulatory Flexibility Act;
  - e. A press release will be issued.
  - f. The appropriate Congressional committees will be informed.

## PRE-DECISIONAL INFORMATION

The Commissioners

9

- g. The NRC has determined that this action is not a major rule under the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA) and has confirmed this determination with OMB. This determination will be reflected in correspondence to the President of the Senate, the Speaker of the House, and the General Counsel of the General Accounting Office.

William D. Travers  
Executive Director for Operations

Attachments:

- \* 1. Federal Register Notice
- \* 2. Regulatory Analysis
- 3. Event Reporting Guidelines (NUREG-1022, Revision 2)
- \* 4. ACRS Letter
- \* 5. Memorandum Responding to ACRS Recommendations

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# PREDECISIONAL

PREPARED FOR INTERNAL COMMITTEE USE

NUREG-1022  
Rev. 2

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## EVENT REPORTING GUIDELINES 10 CFR 50.72 and 50.73

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Manuscript Completed: \_\_\_\_\_  
Date Published: \_\_\_\_\_

U.S. Nuclear Regulatory Commission  
Washington, DC 20555

ATTACHMENT ~~4~~ 4/3



## PAPERWORK REDUCTION ACT STATEMENT

This Revision 2 to NUREG-1022 revises the event reporting guidelines to: implement amendments 10 CFR 50.72 and 50.73; and incorporate minor revisions to the guidelines for the purpose of clarification.

The amended rules amend information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). They have been submitted to the Office of Management and Budget for review and approval of the information collection requirements.

The public reporting burden for the currently existing reporting requirements in 10 CFR 50.72 and 50.73 is estimated to average about 790 hours per response (i.e., per commercial nuclear power reactor per year) including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. It is estimated that the amendments impose a one time implementation burden of about 200 hours per reactor, after which there will be a recurring annual burden reduction of about 200 hours per reactor per year. The U.S. Nuclear Regulatory Commission is seeking public comment on the potential impact of the information collection contained in the rule and on the following issues:

- Is the information collection necessary for the proper performance of the NRC, including whether the information will have practical utility?
- Is the estimate of burden accurate?
- Is there a way to enhance the quality, utility, and clarity of the information to be collected?
- How can the burden of the information collection be minimized, including the use of automated collection techniques?

Send comments on any aspect of this information collection, including suggestions for reducing this burden, to the Information and Records Management Branch (T-5 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 or by Internet electronic mail to [BJ51@NRC.GOV](mailto:BJ51@NRC.GOV); and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150 AF98), Office of Management and Budget, Washington, DC 20503.

Comments to OMB on the information collections or on the above issues should be submitted by (insert date 30 days after publication in the Federal Register). Comments received after this date will be considered if it is practical to do so, but consideration cannot be ensured for comments received after this date.

### Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a currently valid OMB control number.

## **ABSTRACT**

This Revision 2 to NUREG-1022 revises the event reporting guidelines to: implement amendments to 10 CFR 50.72 and 50.73; and incorporate minor revisions to the guidelines for the purpose of clarification.

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## CONTENTS

PAPERWORK REDUCTION ACT STATEMENT .....	ii
ABSTRACT .....	iii
EXECUTIVE SUMMARY .....	vii
ABBREVIATIONS .....	ix
1 INTRODUCTION .....	1
1.1 Background .....	1
1.2 Revised Reporting Guidelines .....	1
1.3 New or Different Guidance .....	2
2 REPORTING AREAS WARRANTING SPECIAL MENTION .....	7
2.1 Engineering Judgment .....	7
2.2 Differences in Tense Between 10 CFR 50.72 and 50.73 .....	7
2.3 Reporting Multiple Events .....	7
2.4 Deficiencies Discovered During Engineering Reviews .....	8
2.5 Time Limits for Reporting .....	8
2.6 Events Discussed with the NRC Staff .....	9
2.7 Voluntary Reporting .....	9
2.8 Retraction or Cancellation of Event Reports .....	10
3 SPECIFIC REPORTING GUIDELINES .....	11
3.1 Section 50.72 and 50.73 General Requirements .....	11
3.1.1 Immediate Notification Requirements .....	11
3.1.2 Licensee Event Report System .....	14
3.2 Specific Reporting Criteria .....	15
3.2.1 Plant Shutdown Required by Technical Specifications .....	15
3.2.2 Operation or Condition Prohibited by Technical Specifications .....	18
3.2.3 Deviation from Technical Specifications under §50.54(x) .....	24
3.2.4 Degraded or Unanalyzed Condition .....	25
3.2.5 External Threat or Hampering .....	30
3.2.6 Actuation of an Engineered Safety Feature (ESF) .....	33
3.2.7 Event or Condition That Could Have Prevented Fulfillment of the Safety Function of Structures or Systems .....	40
3.2.8 Common-cause Failures of Independent Trains or Channels .....	52
3.2.9 Airborne or Liquid Effluent Release .....	55
3.2.10 Internal Threat or Hampering .....	57
3.2.11 Contaminated Person Transported Offsite .....	60

3.2.12 News Release or Notification of Other Government Agency .....	61
3.2.13 Loss of Emergency Preparedness Capabilities .....	65
3.3 Followup Notification .....	69
<b>4 EMERGENCY NOTIFICATION SYSTEM REPORTING .....</b>	<b>71</b>
4.1 Emergency Notification System .....	71
4.2 General ENS Notification .....	72
4.2.1 Timeliness .....	72
4.2.2 Voluntary Notifications .....	72
4.2.3 ENS Notification Retraction .....	72
4.2.4 ENS Event Notification Worksheet (NRC Form 361) .....	72
4.3 Typical ENS Reporting Issues .....	73
<b>5 LICENSEE EVENT REPORTS .....</b>	<b>75</b>
5.1 LER Reporting Guidelines .....	75
5.1.1 Submission of LERs .....	75
5.1.2 LER Forwarding Letter and Cancellations .....	75
5.1.3 Report Legibility .....	76
5.1.4 Voluntary LERs .....	76
5.1.5 Supplemental Information and Revised LERs .....	76
5.1.6 Special Reports .....	77
5.1.7 Appendix J Reports (Containment Leak Rate Test Reports) .....	77
5.1.8 10 CFR Part 21 Reports .....	77
5.1.9 Section 73.71 Reports .....	78
5.1.10 Availability of LER Forms .....	78
5.2 LER Content Requirements and Preparation Guidance .....	78
5.2.1 Optical Character Reader .....	79
5.2.2 Narrative Description or Text (NRC Form 366A, Item 17) .....	79
5.2.3 Assessment of Safety Consequences .....	87
5.2.4 Corrective Actions .....	88
5.2.5 Previous Occurrences .....	88
5.2.6 Abstract (NRC Form 366, Item 16) .....	89
5.2.7 Other Fields on the LER Form .....	89
5.2.8 Examples of LER Forms .....	94

## TABLES

1. Comparison of Reporting Criteria .....	3
---	---

## EXECUTIVE SUMMARY

Two of the many elements contributing to the safety of nuclear power are emergency response and the feedback of operating experience into plant operations. These are achieved partly by the licensee event reporting requirements of Title 10 of the *Code of Federal Regulations*, Part 50, Sections 50.72 and 50.73 (10 CFR 50.72 and 50.73). Section 50.72 provides for immediate notification requirements via the emergency notification system (ENS) and Section 50.73 provides for 60-day written licensee event reports (LERs).

The information reported under 10 CFR 50.72 and 50.73 is used by the NRC staff in responding to emergencies, monitoring ongoing events, confirming licensing bases, studying potentially generic safety problems, assessing trends and patterns of operational experience, monitoring performance, identifying precursors of more significant events, and providing operational experience to the industry.

This Revision 2 to NUREG-1022 revises the event reporting guidelines to: implement amendments to 10 CFR 50.72 and 50.73; and incorporate minor revisions to the guidelines for the purpose of clarification. This report supersedes Revision 1 to NUREG-1022.

The document is structured to assist licensees in achieving prompt and complete reporting of specified events and conditions. It includes specific discussions of general issues that have been difficult to implement in the past such as engineering judgment, time limits for reporting, multiple failures and related events, deficiencies discovered during licensee engineering reviews, and human performance issues. It also includes a comprehensive discussion of each specific reporting criterion with illustrative examples and definitions of key terms and phrases.

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## ABBREVIATIONS

AIT	augmented inspection team
ASME	American Society of Mechanical Engineers
ASP	accident sequence precursor
ATWS	anticipated transient without scram
BPV	Boiler and Pressure Vessel Code (ASME)
BWR	boiling-water reactor
CFR	<i>Code of Federal Regulations</i>
CRDM	control rod drive mechanism
CRVS	control room ventilation system
DBDR	design-basis documentation review
DDR	design document reconstitution
ECCS	emergency core cooling system
EDG	emergency diesel generator
EIIS	Energy Industry Identification System
ENS	emergency notification system
EO	emergency officer
EOF	emergency operations facility
EOP	emergency operating procedure
EPIX	equipment performance and information exchange
EPA	Environmental Protection Agency (U.S.)
ERDS	emergency response data system
ERF	emergency response facility
ESF	engineered safety feature(s)
ESW	emergency service water
FEMA	Federal Emergency Management Agency
FFD	fitness for duty
FSAR	final safety analysis report
FTS	federal telecommunications system
GDC	general design criteria
GL	generic letter
HOO	headquarters operations officer
HP	health physics
HPCI	high-pressure coolant injection

HPCS	high-pressure core spray
HPI	high-pressure injection
HPN	health physics network
HPSI	high pressure safety injection
HVAC	heating, ventilation and air conditioning
IEEE	Institute of Electrical and Electronics Engineers
IIT	incident investigation team
ILRT	integrated leak rate test
IN	information notice
INPO	Institute of Nuclear Power Operations
ISI	inservice inspection
IST	inservice testing
ISTS	improved standard technical specifications
LCO	limiting condition for operation
LER	licensee event report
LOCA	loss of coolant accident
LPCI	low-pressure coolant injection
LPCA	low-pressure core spray
LPSW	low-pressure service water
MPC	maximum permissible concentration
MSIV	main steam isolation valve
NRC	Nuclear Regulatory Commission (U.S.)
NRR	Nuclear Reactor Regulation, Office of
NUMARC	Nuclear Management and Resources Council
OCR	optical character reader
OMS	overpressure mitigation system
PDR	Public Document Room
PGA	policies, guidance, and administrative controls
PWR	pressurized water reactor
RAB	Reactor Analysis Branch
RBVS	reactor building ventilation system
RCIC	reactor core isolation cooling
RCP	reactor coolant pump
RCS	reactor coolant system
RDO	regional duty officer
RHR	residual heat removal
RPS	reactor protection system
RWCU	reactor water cleanup
SAR	safety analysis report
S/D	shutdown
SIS	safety injection system

SOV	solenoid-operated valve
SPDS	safety parameter display system
SRO	senior reactor operator
STS	standard technical specifications
TS	technical specification(s)
TSC	technical support center



## 1 INTRODUCTION

This document provides guidance on the reporting requirements of Title 10 of the *Code of Federal Regulations*, Part 50, Sections 50.72 and 50.73 (10 CFR 50.72 and 10 CFR 50.73). While these reporting requirements range from immediate, 1-hour, 4-hour and ~~4-8~~-hour telephone notifications to ~~30-60~~-day written reports, covering a broad spectrum of events from emergencies to component level deficiencies, the NRC wishes to emphasize that reporting requirements should not interfere with ensuring the safe operation of a nuclear power plant. Licensees' immediate attention must always be given to operational safety concerns.

### 1.1 Background

In 1983, partially in response to lessons from the Three Mile Island accident, the U.S. Nuclear Regulatory Commission (NRC) revised its immediate notification requirements via the emergency notification system (ENS) in 10 CFR 50.72 and modified and codified its written licensee event report (LER) system requirements in 10 CFR 50.73. The revision of 10 CFR 50.72 and the new 10 CFR 50.73 became effective on January 1, 1984. Together, they specified the types of events and conditions reportable to the NRC for emergency response and identifying plant-specific and generic safety issues.

The two rules have identical reporting thresholds and similar language whenever possible. Section 50.72 is structured to provide telephone notification of reportable events to the NRC Operations Center within a time frame established by the relative importance of the events and the need for prompt NRC action. Section 50.73 requires written LERs to be submitted on reportable events within ~~30-60~~ days of their discovery.

### 1.2 Revised Reporting Guidelines

The purpose of this Revision 2 to NUREG-1022 is to revise the event reporting guidelines to implement amendments 10 CFR 50.72 and 50.73, which are summarized in Table 1, and incorporate minor revisions to the guidelines for the purpose of clarification. This report supersedes Revision 1 to NUREG-1022.

Section 2 clarifies specific areas of 10 CFR 50.72 and 50.73 that are applicable to multiple reporting criteria or that historically appear to be subject to varied interpretations. It covers such diverse subjects as engineering judgment, differences in tenses between the two rules, retraction and voluntary reporting, legal reporting requirements, and human performance issues.

Section 3 contains guidelines on event reporting for specific criteria in both rules by means of discussions and examples of reported events. To minimize repetition, similar criteria from both rules are addressed together. Section 3.1 addresses general ENS and LER reporting

requirements. Section 3.2 addresses specific ENS and LER reporting criteria. It includes a comprehensive discussion of each specific reporting criterion with illustrative examples and definitions of key terms and phrases. Section 3.3 addresses the requirements for immediate ENS followup notifications during the course of an event.

Section 4 explains ENS communications reporting timeliness and completeness, voluntary notifications, and retractions. Appropriate ENS emergency notification methods are described.

Section 5 provides guidelines on administrative requirements, preparation, and submittal of LERs. It specifies the information an LER should contain and provides steps to be followed in preparing an LER. It also includes an expanded human performance discussion to achieve ENS and LER content that examines both equipment and human performance.

### **1.3 New or Different Guidance**

Reporting guidance that is considered new or different from that provided in NUREG-1022, Revision 1, is indicated by redlining the appropriate text. In some cases, strikeout marking is also provided to show that specific items are being deleted.

**Table 1. Comparison of Reporting Criteria**

§50.72	§50.73
<b>(b)(1)(i)</b> The declaration of any of the emergency classes specified in the licensee's approved Emergency Plan.	
<b>(b)(2)(i)</b> The initiation of any nuclear plant shutdown required by the plant's technical specifications.	<p><b>(a)(2)(i)(A)</b> The completion of any nuclear plant shutdown required by the plant's technical specifications.</p> <p><b>(a)(2)(i)(B)</b> Any operation or condition which was prohibited by the plant's technical specifications except when:</p> <ul style="list-style-type: none"> <li>(1) The technical specification is administrative in nature;</li> <li>(2) The event consists solely of a case of a late surveillance test where the oversight is corrected, the test is performed, and the equipment is found to be capable of performing its specified safety functions; or</li> <li>(3) The technical specification was revised prior to discovery of the event such that the operation or condition was no longer prohibited at the time of discovery of the event.</li> </ul> <p><b>(a)(2)(i)(C)</b> Any deviation from the plant's technical specifications authorized pursuant to Sec. 50.54(x) of this part.</p>
<b>(b)(1)(i)</b> Any deviation from the plant's technical specifications authorized pursuant to Sec. 50.54(x) of this part.	
<b>(b)(3)(ii)</b> Any event or condition that results in: <ul style="list-style-type: none"> <li>(A) The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or</li> <li>(B) The nuclear power plant being in an unanalyzed condition that significantly degrades plant safety.</li> </ul>	<b>(a)(2)(ii)</b> Any event or condition that resulted in: <ul style="list-style-type: none"> <li>(A) The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded;</li> <li>(B) The nuclear power plant being in an unanalyzed condition that significantly degrades plant safety; or</li> <li>(C) The ability of independent trains or channels to perform their specified safety functions being degraded as a result of a single cause or condition that is worsening such that it is necessary to correct the cause or condition in order to ensure the trains' or channels' ability to perform their specified safety functions.</li> </ul>

	<p><b>(a)(2)(iii)</b> Any natural phenomenon or other external condition that posed an actual threat to the safety of the nuclear power plant or significantly hampered site personnel in the performance of duties necessary for the safe operation of the nuclear power plant.</p>
<p><b>(b)(2)(iv)(A)</b> Any event that results or should have resulted in emergency core cooling system (ECCS) discharge into the reactor coolant system as a result of a valid signal except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.</p> <p><b>(b)(2)(iv)(B)</b> Any event or condition that results in a valid automatic or intentional manual actuation of the reactor protection system (RPS) when the reactor is critical except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.</p> <p><b>(b)(3)(iv)</b> Any event or condition that results in a valid automatic or intentional manual actuation of any engineered safety feature (ESF) except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.</p>	<p><b>(a)(2)(iv)</b> Any event or condition that resulted in a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS), except when:</p> <p>(A) The actuation resulted from and was part of a pre-planned sequence during testing or reactor operation;</p> <p>(B) The actuation was invalid and;</p> <p>(1) Occurred while the system was properly removed from service;</p> <p>(2) Occurred after the safety function had been already completed. or</p> <p>(3) Involved only the following specific ESFs or their equivalent systems:</p> <p>(i) Reactor water clean-up system;</p> <p>(ii) Control room emergency ventilation system;</p> <p>(iii) Reactor building ventilation system.</p> <p>(iv) Fuel building ventilation system;</p> <p>or</p> <p>(v) Auxiliary building ventilation.</p>
<p><b>(b)(3)(v)</b> Any event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to:</p> <p>(A) Shut down the reactor and maintain it in a safe shutdown condition;</p> <p>(B) Remove residual heat;</p> <p>(C) Control the release of radioactive material; or</p> <p>(D) Mitigate the consequences of an accident.</p>	<p><b>(a)(2)(v)</b> Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to:</p> <p>(A) Shut down the reactor and maintain it in a safe shutdown condition;</p> <p>(B) Remove residual heat;</p> <p>(C) Control the release of radioactive material; or</p> <p>(D) Mitigate the consequences of an accident.</p>

<p><b>(b)(3)(vi)</b> Events covered in paragraph (b)(3)(v) of this section 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 pursuant to this paragraph if redundant equipment in the same system was operable and available to perform the required safety function.</p>	<p><b>(a)(2)(vi)</b> Events covered in paragraph (a)(2)(v) of this section 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 pursuant to this paragraph if redundant equipment in the same system was operable and available to perform the required safety function.</p>
	<p><b>(a)(2)(vii)</b> Any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to:</p> <ul style="list-style-type: none"> <li>(A) Shut down the reactor and maintain it in a safe shutdown condition;</li> <li>(B) Remove residual heat;</li> <li>(C) Control the release of radioactive material; or</li> <li>(D) Mitigate the consequences of an accident.</li> </ul>
	<p><b>(a)(2)(viii)(A)</b> Any airborne radioactive release that, when averaged over a time period of 1 hour, resulted in airborne radionuclide concentrations in an unrestricted area that exceeded 20 times the applicable concentration limits specified in appendix B to part 20, table 2, column 1.</p> <p><b>(a)(2)(viii)(B)</b> Any liquid effluent release that, when averaged over a time period of 1 hour, exceeds 20 times the applicable concentrations specified in appendix B to part 20, table 2, column 2, at the point of entry into the receiving waters (i.e., unrestricted area) for all radionuclides except tritium and dissolved noble gases.</p>
	<p><b>(a)(2)(ix)</b> [Reserved]</p>

	<b>(a)(2)(x)</b> Any event that posed an actual threat to the safety of the nuclear power plant or significantly hampered site personnel in the performance of duties necessary for the safe operation of the nuclear power plant including fires, toxic gas releases, or radioactive releases.
<b>(b)(1)(xi)</b> Issuance of a news release or notification of other government agencies with respect to any event or situation related to the health and safety of the public or onsite personnel or protection of the environment. Such an event may include an onsite fatality or inadvertent release of radioactively contaminated materials.	
<b>(b)(3)(xii)</b> Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment.	
<b>(b)(3)(xiii)</b> Any event that results in a major loss of emergency assessment capability, offsite response capability, or offsite communications capability (e.g., significant portion of control room indication, emergency notification system, or offsite notification system).	

## **2 REPORTING AREAS WARRANTING SPECIAL MENTION**

This section clarifies specific areas that are applicable to multiple reporting criteria or that historically appear to be subject to varied interpretations.

### **2.1 Engineering Judgment**

The reportability of many events and conditions is self evident. However, the reportability of other events and conditions may not be readily apparent and the use of engineering judgment is involved in determining reportability.

Engineering judgment may include either a documented engineering analysis or a judgment by a technically qualified individual, depending on the complexity, seriousness, and nature of the event or condition. A documented engineering analysis is not a requirement for all events or conditions, but it would be appropriate for particularly complex situations. In addition, although not required by the rule, it may be prudent to record in writing that a judgment was exercised by identifying the individual making the judgment, the date made, and briefly documenting the basis for this judgment. In any case, the staff considers that the use of engineering judgment implies a logical thought process that supports the judgment.

### **2.2 Differences in Tense Between 10 CFR 50.72 and 50.73**

The present tense is generally used in 10 CFR 50.72 because the event or condition generally would be ongoing at the time of reporting. The past tense is used in 10 CFR 50.73 because the event or condition is generally past when an LER is written. Where the tense is relevant to reportability, it is addressed under the specific criterion in Section 3 of this report.

### **2.3 Reporting Multiple Events in a Single Report**

More than one failure or event may be reported in a single ENS notification or LER if (1) the failures or events are related (i.e., they have the same general cause or consequences) and (2) they occurred during a single activity (e.g., a test program) over a reasonably short time (e.g., within 4 hours or 8 hours for ENS notifications, or within 60 days LER reporting).

To the extent feasible, report failures that occurred within the first 60 days of discovery of the first failure on one LER. If appropriate, state in the LER text that a supplement to the LER will be submitted when the test program is completed. In the revised LER, include all the failures, including those reported in the original LER (i.e., the revised LER should stand alone).

Generally, LERs are intended to address specific events and plant conditions. Thus, unrelated events or conditions should not be reported in one LER. Also, an LER revision should not be used to report subsequent failures of the same or like components that are the result of a

different cause or for separate events or activities.

Unrelated failures or events should be reported as separate ENS notifications to be given unique ENS numbers by the NRC. However, multiple ENS notifications may be addressed in a single telephone call.

## 2.4 Deficiencies Discovered During Engineering Reviews or Inspections

As indicated in NUREG-1397, "An Assessment of Design Control Practices and Design Reconstitution Programs in the Nuclear Power Industry," February 1991, Section 4.3.2, the reporting requirements specified in 10 CFR 50.9, 50.72, and 50.73 apply equally to discrepancies discovered during design document reconstitution (DDR) programs, design-bases documentation reviews (DBDRs), and other similar engineering reviews. There is no basis for treating discrepancies discovered during such reviews differently from any other reportable item.

Licensees should evaluate the reportability of suspected but unsubstantiated discrepancies discovered during such a review program in the same manner as other potentially reportable items. See Section 2.5 for discussion of reporting time limits and discovery dates.

## 2.5 Time Limits for Reporting

Reporting times in 10 CFR 50.72 are keyed to the occurrence of the event or condition, as described below.

Section 50.72(a)(3) requires ENS notification of the declaration of an Emergency Class "...immediately after notification of the appropriate State or local agencies and not later than one hour after the time the licensee declares one of the Emergency Classes."

Section 50.72(b)(1) requires ENS notification for ~~specific types of events and conditions~~ one type of event "...as soon as practical and in all cases within one hour of the occurrence of any deviation from the plant's technical specifications authorized ...."

Section 50.72(b)(2) requires ENS notification for specific types of events and conditions "... as soon as practical and in all cases, within four hours of the occurrence of any of the following: ...."

Section 50.72(b)(3) requires ENS notification for specific types of events and conditions "... as soon as practical and in all cases, within ~~four~~ eight hours of the occurrence of any of the following: ...."

These 10 CFR 50.72 reporting times have some flexibility because a licensee needs to ensure that reporting does not interfere with plant operation. However, that does not mean that a licensee should automatically wait until close to the time limit expiration before reporting.

Section 50.73 requires submittal of an LER "within ~~30~~ 60 days after the discovery" of a reportable event. Many reportable events are discovered when they occur. However, if the event is discovered at some later time, the discovery date is when the reportability clock starts

under 10 CFR 50.73.

Discovery date is generally the date when the event was discovered rather than the date when an evaluation of the event is completed. For example, if a technician sees a problem, but a delay occurs before an engineer or supervisor has a chance to review the situation, the discovery date (which starts the 60-day clock) is the date that the technician sees a problem.

However, in some cases, such as discovery of an existing but previously unrecognized condition, it may be necessary to undertake an evaluation in order to determine if an event or condition is reportable. If so, the guidance provided in Generic Letter 91-18, "Information to Licensees Regarding two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability," which applies primarily to operability determinations, is appropriate for reportability determinations as well. This guidance indicates that the evaluation should proceed on a time scale commensurate with the safety significance of the issue and, whenever reasonable expectation that the equipment in question is operable no longer exists, or significant doubts begin to arise, appropriate actions, including reporting, should be taken. In such cases, if a telephone notification of the condition is required under §50.72, it should be made as soon as practical and in all cases within the required time limits<sup>(1)</sup> after the reasonable expectation of operability no longer exists.

For the case of a common cause degradation of independent trains or channels reported under 10 CFR 50.73(a)(2)(ii)(C), it is necessary to determine if the condition is worsening such that is necessary to correct the cause or condition in independent trains or channels in order to ensure their ability to perform their specified safety functions. It is not possible to know whether an event is reportable under this criterion until that point is reached. Accordingly, the LER should be submitted within 60 days after the determination is made.

## 2.6 Events Discussed with the NRC Staff

On occasion, some licensee personnel have erroneously believed that if a reportable event or condition had been discussed with the resident inspector or other NRC staff, there was no need to report under 10 CFR 50.72 and 50.73 because the NRC was aware of the situation. Some licensee personnel have also expressed a similar misunderstanding for cases in which the NRC staff identified a reportable event or condition to the licensee via inspection or assessment activities. Such conditions do not satisfy §§50.72 and 50.73. Sections 50.72 and 50.73 specifically require a telephone notification via the ENS and/or submittal of a written LER for an event or condition that meets the criteria stated in those rules.

## 2.7 Voluntary Reporting

Information that does not meet the reporting criteria of 10 CFR 50.72 and 50.73 may be reportable under other requirements such as 10 CFR 50.9, 20.2202, 20.2203, 50.36, 72.74, 72.216, 73.71, and Part 21. In particular, 10 CFR 50.9 (b) states "Each applicant or licensee shall notify the Commission of information identified by the applicant or licensee as having for the regulated activity a significant implication for public health and safety or common defense and security." This applies to information which is not already required by other reporting or

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<sup>(1)</sup> One hour, four hours or eight hours, depending on the reporting criterion.

updating requirements. Notification must be made to the Administrator of the appropriate Regional Office within two working days of identifying the information. Reporting pursuant to §50.9 is required, not voluntary.<sup>(2)</sup> Voluntary reporting, as discussed in the following paragraphs, pertains to information of lesser significance than described in §50.9(b).

Licensees are permitted and encouraged to report any event or condition that does not meet the criteria for required reporting, if the licensee believes that the event or condition might be of safety significance or of generic interest or concern. Reporting requirements aside, assurance of safe operation of all plants depends on accurate and complete reporting by each licensee of all events having potential safety significance. Instructions for voluntary ENS notifications and LERs are discussed in Sections 4.2.2 and 5.1.5 of this report.

The NRC staff encourages voluntary LERs rather than information letters for voluntary reporting. The LER format is preferable because it provides for the information needed to support NRC review of the event and facilitates administrative processing, including data entry.

## **2.8 Retraction or Cancellation of Event Reports**

An ENS notification may be retracted via a follow-up telephone call, as discussed further in Section 4.2.3 of this report. A retracted ENS report is retained in the ENS data base, along with the retraction.

An LER may be canceled by letter as discussed further in Section 5.1.2 of this report. Canceled LERs are deleted from the LER data base.

Sound, logical bases for the withdrawal should be communicated with the retraction or cancellation. (Example 3 in Section 3.2.4 illustrates a case where there were sound reasons for a retraction. The last event under Example 1 in Section 3.2.6 illustrates a case where the reasons for retraction were not adequate.)

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<sup>(2)</sup> As indicated in the Statement of Considerations for §50.9, "A licensee cannot evade the rule by never 'finding' information to be significant. The fact that a licensee considers information to be significant can be established, for example, by the actions taken by the licensee to evaluate that information." 59 FR 49362, December 31, 1987.

### 3 SPECIFIC REPORTING GUIDELINES

#### 3.1 Section 50.72 and 50.73 General Requirements

##### 3.1.1 Immediate Notification Requirements

<b>§50.72(a) General Requirements<sup>1</sup></b>	<b>10 CFR 50.73</b>
<p>"(1) Each nuclear power reactor licensee licensed under <del>§50</del>Sec. 50.21(b) or <del>§50</del>Sec. 50.22 of this part shall notify the NRC Operations Center via the <del>E</del>mergency <del>N</del>otification <del>S</del>ystem of:</p> <p>(i) The declaration of any of the <del>E</del>mergency <del>C</del>lasses specified in the licensee's approved Emergency Plan;<sup>2</sup> or</p> <p>(ii) <del>Any</del> <del>O</del>f those non-<del>E</del>mergency events specified in paragraph (b) of this section <u>that occurred within three years of the date they were discovered.</u></p> <p>(2) If the <del>E</del>mergency <del>N</del>otification <del>S</del>ystem is inoperative, the licensee shall make the required notifications via commercial telephone service, other dedicated telephone system, or any other method which will ensure that a report is made as soon as practical to the NRC Operations Center.<sup>3,4</sup></p> <p>(3) The licensee shall notify the NRC immediately after notification of the appropriate State or local agencies and not later than one hour after the time the licensee declares one of the <del>E</del>mergency <del>C</del>lasses.</p> <p><sup>1</sup> Other requirements for immediate notification of the NRC by licensed operating nuclear power reactors are contained elsewhere in this chapter, in particular, §§ 20.1906, 20.2202, 50.36, <u>72.74, 72.75</u>, and 73.71.</p> <p><sup>2</sup> These Emergency Classes are addressed in Appendix E of this part.</p> <p><sup>3</sup> Commercial telephone number of the NRC Operations Center is (301) 816-5100."</p> <p><sup>4</sup> [Reserved]</p> <p>(Continued on next page)</p>	<p>If the event or condition that was the basis for the Emergency Class declaration met one or more of the 10 CFR 50.73 reporting criteria, an LER is required.</p>

50.72(a) (Continued)

(4) The licensee shall activate the Emergency Response Data System (ERDS)<sup>5</sup> as soon as possible but not later than one hour after declaring an emergency class of alert, site area emergency, or general emergency. The ERDS may also be activated by the licensee during emergency drills or exercises if the licensee's computer system has the capability to transmit the exercise data.

(5) When making a report under paragraph (a)(3) of this section, the licensee shall identify:

- (i) The Emergency Class declared; or
- (ii) Either paragraph (b)(1), "One-Hour Report," or paragraph (b)(2) "Four-Hour Report," or paragraph (b)(3), "Eight-hour report," as the paragraph of this section requiring notification of the ~~Non-Emergency~~ ~~Non-emergency~~ event."

<sup>5</sup> Requirements for ERDS are addressed in Appendix E, Section VI.

### Discussion

Appendix E to 10 CFR Part 50, Section IV (C), "Activation of Emergency Organization," establishes four emergency classes for nuclear power plants: Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency. NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (March 1987), and more recently, NUMARC/NESP-007, Revision 2, "Methodology for Development of Emergency Action Levels" (January 1992), provide the basis for these emergency classes and numerous examples of the events and conditions typical of each emergency class. Licensees use this guidance in preparing their emergency plans. Use of these four emergency class terms in the ENS notification help the NRC recognize the significance of an emergency. Time frames specified for notification in §50.72(a) use the words "immediately" and "not later than one hour" to ensure the Commission can fulfill its responsibilities during and following the most serious events.

Occasionally, a licensee discovers that a condition existed which met the emergency plan criteria but no emergency was declared and the basis for the emergency class no longer exists at the time of this discovery. This may be due to a rapidly concluded event or an oversight in the emergency classification made during the event or it may be determined during a post-event review. Frequently, in cases of this nature, which were discovered after the fact, licensees have declared the emergency class, immediately terminated the emergency class and then made the appropriate notifications. However, the NRC staff does not consider actual declaration of the emergency class to be necessary in these circumstances; an ENS notification (or an ENS update if the event was previously reported but misclassified) within one hour of the

discovery of the undeclared (or misclassified) event provides an acceptable alternative.<sup>(3)</sup>

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<sup>(3)</sup> Notification of the State and local emergency response organizations should be made in accordance with the arrangements made between the licensee and offsite organizations.

### 3.1.2 Licensee Event Report System

<p style="text-align: center;"><b>10 CFR 50.72</b></p> <p>There is no comparable passage in 10 CFR 50.72.</p>	<p style="text-align: center;"><b>§50.73(a)(1)</b></p> <p>"The holder of an operating license for a nuclear power plant (licensee) shall submit a Licensee Event Report (LER) for any event of the type described in this paragraph within <del>30</del>60 days after the discovery of the event. <u>In the case of an invalid actuation of an engineered safety feature (ESF) reported under section 50.73(a)(2)(iv) the licensee may, at its option, provide a telephone notification to the NRC Operations Center within 60 days after discovery of the event instead of submitting a written LER.</u> Unless otherwise specified in this section, the licensee shall report an event <u>if it occurred within three years of the date of discovery</u> regardless of the plant mode or power level, and regardless of the significance of the structure, system, or component that initiated the event."</p>
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#### Discussion

Unless otherwise specified, this part of the rule requires reporting of an event if it occurred within three years prior to discovery regardless of the plant mode or power level and regardless of the significance of the structure, system, or component that initiated the event. In the case of an invalid actuation of an engineered safety feature (ESF) reported under section 50.73(a)(2)(iv) the licensee may, at its option, provide a telephone notification to the NRC Operations Center within 60 days after discovery of the event instead of submitting a written LER.

### 3.2 Specific Reporting Criteria

#### 3.2.1 Plant Shutdown Required by Technical Specifications

§50.72(b)(1)	§50.73(a)(2)(i)(A)
"The initiation of any nuclear plant shutdown required by the plant's technical specifications."	"The completion of any nuclear plant shutdown required by the plant's technical specifications, or."

If not reported under §50.72(a) or (b)(1), an ENS notification is required. If the shutdown is completed, an LER is required.

#### Discussion

The §50.72 reporting requirement is intended to capture those events for which TS require the initiation of reactor shutdown to provide the NRC with early warning of safety significant conditions serious enough to warrant that the plant be shut down.

For §50.72 reporting purposes, the phrase "initiation of any nuclear plant shutdown" includes action to start reducing reactor power, i.e., adding negative reactivity to achieve a nuclear plant shutdown required by TS. This includes initiation of any shutdown due to expected inability to restore equipment prior to exceeding the LCO action time. As a practical matter, in order to meet the time limits for reporting under §50.72, the reporting decision should sometimes be based on such expectations. (See Example 4.)

The "initiation of any nuclear plant shutdown" does not include mode changes required by TS if initiated after the plant is already in a shutdown condition.

A reduction in power for some other purpose, not constituting initiation of a shutdown required by TS, is not reportable under this criterion.

For §50.73 reporting purposes, the phrase "completion of any nuclear plant shutdown" is defined as the point in time during a TS required shutdown when the plant enters the first shutdown condition required by a limiting condition for operations (LCO) [e.g., hot standby (Mode 3) for PWRs] with the standard technical specifications (STS). For example, if at 0200 hours a plant enters an LCO action statement that states, "restore the inoperable channel to operable status within 12 hours or be in at least Hot Standby within the next 6 hours," the plant must be shut down (i.e., at least in hot standby) by 2000 hours. An LER is required if the inoperable channel is not returned to operable status by 2000 hours and the plant enters hot standby.

An LER is not required if a failure was or could have been corrected before a plant has completed shutdown (as discussed above) and no other criteria in §50.73 apply.

#### Examples

(1) Initiation of a TS-Required Plant Shutdown

While operating at 100-percent power, one of the battery chargers, which feeds a 125 Vdc vital bus, failed during a surveillance test. The battery charger was declared inoperable, placing the plant in a 2-hour LCO to return the battery charger to an operable status or commence a TS-required plant shutdown. Licensee personnel started reducing reactor power to achieve a nuclear plant shutdown required by a TS when they were unable to complete repairs to the inoperable battery charger in the 2 hours allowed. The cause of the battery charger failure was subsequently identified and repaired. Upon completion of surveillance testing, the battery charger was returned to service and the TS required plant shutdown was stopped at 96-percent power.

The licensee made an ENS notification because of the initiation of a TS-required plant shutdown. An LER was not required under this criterion since the failed battery charger was corrected before the plant completed shutdown.

(2) Initiation and Completion of a TS-Required Plant Shutdown

During startup of a PWR plant with reactor power in the intermediate range, two of the four reactor coolant pumps (RCPs) tripped when the station power transformer supplying power de-energized. With less than four RCPs operating, the plant entered a 1-hour LCO to be in hot standby. Control rods were manually inserted to place the plant in a shutdown condition.

The licensee made an ENS notification because of the initiation of a TS-required plant shutdown. An LER was required because of the completion of the TS-required plant shutdown.

(3) Failure that was or could have been corrected before a plant has completed shut down was required.

- Question: What about the situation where you have seven days to fix a component or be shut down, but the plant must be shut down to fix the component? Assume the plant shuts down, the component is fixed, and the plant returns to power prior to the end of the seven day period. Is that situation reportable?

Answer: No. If the shutdown was not required by the Technical Specifications, it need not be reported. However, other criteria in 50.73 may apply and may require that the event be reported.

- Question: Suppose that there are seven days to fix a problem and it is likely the problem can be fixed during this time period. However, the plant management elects to shut down and fix this problem and other problems. Is an LER required?

Answer: ~~No. Some judgment is required. An LER is not required if the situation could have been corrected before the plant was required to be shut down, and no other criteria in 50.73 apply.~~ The shut down is reportable, however, if the situation could not have been corrected before the plant was required to be shut down, or if other criteria of 50.73 apply.

(4). Initiation of plant shutdown in anticipation of LCO required shutdown.

The plant lost one of two sources of offsite power due to overheating in the main transformer. The TS allow 72 hours to restore the source or initiate a shutdown and be in HOT STANDBY in the next 6 hours and COLD SHUTDOWN in the following 30 hours. The licensee estimated that the transformer problem could not be corrected within the LCO action time. Therefore the decision was made to start a shutdown soon after the transformer problem was discovered.

The shutdown was uneventful and was completed, with the plant in HOT STANDBY, prior to the expiration of the LCO action time. After the plant reached HOT STANDBY, further evaluation indicated that the transformer problem could not be corrected prior to the requirement to place the plant in COLD SHUTDOWN. Based on this time estimate, it was decided to place the unit in COLD SHUTDOWN.

The event is reportable under §50.72(b)(2)(i) as the initiation of plant shutdown required by TS because, at the time the shutdown was initiated, and the time the report was due, it was not expected that the equipment would be restored to operable status within the required time. This is based on the fact that the reporting requirement is intended to capture those events for which TS require the initiation of a reactor shutdown.

The event is reportable under §50.73(a)(2)(i)(A) because the plant shutdown was completed when the plant reached HOT STANDBY (Mode 3). Had the transformer been repaired and the shutdown process terminated before the plant reached Mode 3, the event would not be reportable under §50.73(a)(2)(i)(A).

### 3.2.2 Operation or Condition Prohibited by Technical Specifications

<p style="text-align: center;"><b>10 CFR 50.72</b></p> <p style="text-align: center;">There is no corresponding requirement in 10 CFR 50.72.</p>	<p style="text-align: center;"><b>§50.73(a)(2)(i)(B)</b></p> <p style="text-align: center;">"Any operation or condition <u>which was prohibited by the plant's Technical Specifications; or</u> <u>except when:</u> <u>(1) The technical specification is administrative in nature;</u> <u>(2) The event consists solely of a case of a late surveillance test where the oversight is corrected, the test is performed, and the equipment is found to be capable of performing its specified safety functions; or</u> <u>(3) The technical specification was revised prior to discovery of the event such that the operation or condition was no longer prohibited at the time of discovery of the event."</u></p>
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An LER is required for any operation or condition which was prohibited by the plant's technical specifications, subject to the exceptions stated in the rule.

#### **Discussion<sup>(4)</sup>**

##### Safety Limits and Limiting Safety System Settings

Section 50.36(c)(1) outlines the reporting requirements in technical specifications for events where safety limits or limiting safety system settings are exceeded. It indicates that such reports are to be made as required by §§50.72 and 50.73. There would not be a three year limitation in this case because, in addition to the requirements of §§50.72 and 50.73, specific reporting requirements are stated in §50.36(c)(1), and perhaps in the plant's technical specifications.

##### Limiting Conditions for Operation (LCOs)

Section 50.36(c)(2) outlines LCOs in technical specifications. Certain technical specifications contain LCO statements that include action statements [required actions and associated completion time in the Improved Standard Technical Specifications (ISTS)] to provide constraints on the length of time components or systems may remain inoperable or out of service before the plant must shut down or other compensatory measures must be taken. Such time constraints are based on the safety significance of the component or system being removed from service.

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<sup>(4)</sup> This criterion does not address violations of license conditions that are contained in documents other than the technical specifications. Such violations are reportable as specified in the plant's license or other applicable documents.

An LER is required if a condition existed for a time longer than permitted by the technical specifications [i.e., greater than the allowed outage time (or completion time in ISTS)] even if the condition was not discovered until after the allowable time had elapsed and the condition was rectified immediately upon discovery. This guidance is consistent with that previously given. (For the purpose of this discussion, it is assumed that there was firm evidence that a condition prohibited by technical specifications existed before discovery, for a time longer than permitted by technical specifications.)

### Technical Specification Surveillance Testing

Section 50.36(c)(3) outlines surveillance requirements in technical specifications which assure (1) necessary quality of systems and components, (2) operation within safety limits, and (3) meeting the limiting conditions for operation.

Generally, an operation or condition prohibited by the technical specifications existed and is reportable if surveillance testing indicates that equipment (e.g., one train of a multiple train system) was not capable of performing its specified safety functions (and thus was inoperable) for a period of time longer than allowed by technical specifications (i.e., LCO allowed outage time, or completion time for restoration of equipment in ISTS). Reporting is not required if an event consists solely of a case of a late surveillance test where the oversight is corrected, the test is performed, and the equipment is found to be capable of performing its specified safety functions.

For the purpose of evaluating the reportability of a discrepancy found during surveillance testing that is required by the technical specifications:

- (1) For testing that is conducted within the required time (i.e., the surveillance interval plus any allowed extension), it should be assumed that the discrepancy occurred at the time of its discovery unless there is firm evidence, based on a review of relevant information such as the equipment history and the cause of failure, to indicate that the discrepancy existed previously.
- (2) For testing that is conducted later than the required time, it should be assumed that the discrepancy occurred at the time the testing was required unless there is firm evidence to indicate that it occurred at a different time.

The purpose of this approach is two-fold. It rules out reporting of routine occurrences (i.e., occurrences where a timely surveillance test is performed, the results fall outside of acceptable limits, and the condition is corrected) unless there is firm evidence that equipment was incapable of performing its specified safety function longer than allowed. On the other hand, if the surveillance test is performed substantially late, and the equipment is not capable of performing its specified safety function, the occurrence is not routine. In this case the event is reportable unless there is firm evidence that the duration of the discrepancy was within allowed limits.

In cases where it is discovered that a surveillance test was not performed within its specified frequency or interval, some plants have technical specifications which allow a delay of up to 24 hours in declaring an LCO or technical specifications requirements not met. This allows time to perform the test before making such a declaration and taking other required actions. However,

an LER would still be required if the test indicates that equipment (e.g., one train of a multiple train system) was not capable of performing its specified safety functions (and thus was inoperable) for a period of time longer than allowed by technical specifications. The allowed delay in declaring the LCO not met does not change the fact that the condition existed longer than allowed by technical specifications.

#### Tests Required by ASME Section XI

Sections 50.55a(g) and 50.55a(f) require the implementation of ISI and IST programs in accordance with the applicable edition of the ASME Code for those pumps and valves whose function is required for safety. Standard technical specifications (STS) Section 4.0.5 (or an equivalent) covers these testing requirements.

As with surveillance testing, an operation or condition prohibited by the technical specifications existed and is reportable if the testing indicates that equipment (e.g., one train of a multiple train system required to be operable by the technical specifications) was not capable of performing its specified safety functions (and thus was inoperable) for a period of time longer than allowed by technical specifications (i.e., LCO allowed outage time, or completion time for restoration of equipment in ISTS). Accordingly, similar assumptions and standards should be used. For example, if a timely test indicates that equipment is not capable of performing its specified safety function, it should be assumed that the discrepancy occurred at the time of the test unless there is firm evidence to indicate that it existed previously.

#### Design and Analysis Defects and Deviations

A design or analysis defect or deviation is reportable under this criterion if, as a result, equipment (e.g., one train of a multiple train system) was not capable of performing its specified safety functions (and thus was inoperable) for a period of time longer than allowed by technical specifications. Since design and analysis conditions are long-lasting, the essential question in this case is whether the equipment was capable of performing its specified safety functions.

#### Administrative Requirements

Section 6 of the STS (Section 5 of ISTS), or its equivalent, has a number of administrative requirements such as organizational structure, the required number of personnel on shift, the maximum hours of work permitted during a specific interval of time, and the requirement to have, maintain, and implement certain specified procedures. Violation of a technical specification that is administrative in nature is not reportable.

For example, a change in the plant's organizational structure that has not yet been approved as a technical specification change would not be reportable.

An administrative procedure violation, or failure to implement a procedure, such as failure to lock a high radiation area door, is generally not reportable under this criterion.<sup>(5)</sup>

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<sup>(5)</sup> Radiological conditions and events that are reportable are defined in 10 CFR 20.2202 and 20.2203. Redundant reporting is not required.

### Entry into STS 3.0.3

STS 3.0.3 (ISTS LCO 3.0.3), or its equivalent, establishes requirements for actions when: (1) an LCO is not met and the associated ACTIONS are not met; (2) an associated ACTION is not provided, or (3) as directed by the associated ACTIONS themselves.

Entry into STS 3.0.3 (ISTS LCO 3.0.3) or its equivalent is not necessarily reportable under this criterion. However, the event is reportable under other criteria if, as a result, a required shutdown is initiated and/or completed. ~~is generally reportable under this criterion.~~

### Revised Technical Specifications

An LER is not required for discovery of an operation or condition that occurred in the past and was prohibited at the time it occurred if, prior to the time of discovery, the technical specifications were revised such that the operation or condition is no longer prohibited. Such an event would have little or no significance because the operation or condition would have been determined to be acceptable and allowed under the current technical specifications.

### **Examples**

#### (1) LCO Exceeded

In conducting a timely 30-day surveillance test a licensee found a standby component with a 7-day LCO allowed outage time and associated 8-hour shutdown action statement to be inoperable. (This is equivalent to a 7-day restoration completion time and an 8-hour action completion time in ISTS.) Subsequent review indicated that the component was assembled improperly during maintenance conducted 30 days previously and the post-maintenance test was not adequate to identify the error. Thus, there was firm evidence that the standby component had been inoperable for the entire 30 days.

An LER was required because the condition existed longer than allowed by the technical specifications (7-day LCO allowed outage time and the shutdown action statement time of 8 hours). Had the inoperability been identified and corrected within the required time, the event would not be reportable.

#### (2) Late Surveillance Tests

A licensee, with the plant in Mode 5 following a 10-month refueling outage, determined that certain monthly technical specifications surveillance tests, which were required to be performed regardless of plant mode, had not been performed as required during the outage. The STS 4.0.2 (equivalent to ISTS SR 3.0.2) extension was also exceeded. The surveillance tests were immediately performed.

No LER would be required if the test showed the equipment was still capable of performing its specified safety functions. On the other hand, if the test showed the equipment was not capable of performing its specified safety functions (and thus was inoperable) in excess of the allowed time, the event would be reportable.

(3) Entering STS 3.0.3

- (a) ~~With essential water chillers (A) and (B) out of service, the only remaining operable chiller (A/B) tripped. This condition caused the plant to enter STS 3.0.3 (equivalent to ISTS LCO 3.0.3) for 1 hour, until chiller (A) was restored to service and the temperature was restored to within technical specifications limits.~~
- (b) ~~During a surveillance test on the A train of a two-train Standby Gas Treatment (SBGT) system, a condition was discovered on the B train that rendered it inoperable. The test was halted and steps taken to return the A train to a standby readiness condition. During the restoration, switch manipulations momentarily rendered the A train inoperable. With both trains inoperable, the plant TS specify immediate entry into LCO 3.0.3. The entry into LCO 3.0.3 was logged and then exited within 1 minute once switch manipulation on the A train was completed.~~

(3) Multiple Test Failures

An example of multiple test failures involves the sequential testing of safety valves. Sometimes multiple valves are found to lift with set points outside of technical specification limits.

As discussed above, discrepancies found in technical specifications surveillance tests should be assumed to occur at the time of the test unless there is firm evidence, based on a review of relevant information (e.g., the equipment history and the cause of failure) to indicate that the discrepancy occurred earlier. However, the existence of similar discrepancies in multiple valves is an indication that the discrepancies may well have arisen over a period of time and the failure mode should be evaluated to make this determination. If so, the condition existed during plant operation and the event is reportable under §50.73(a)(2)(i)(B) "Any operation or condition prohibited by the plant's Technical Specifications."

If the discrepancies are large enough that multiple valves are inoperable the event may also be reportable under §50.73(a)(2)(vii) "Any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system ...."

(4) Seismic Restraints

Assume it is found that an exciter panel for one EDG lacked appropriate seismic restraints since the plant was constructed, because of a design, analysis, or construction inadequacy. Upon evaluation, the EDG is determined to be inoperable because it is not capable of performing its specified safety functions during and after an SSE.

An LER would be required because ~~the plant was outside of its design basis~~ the EDG was inoperable for a period of time longer than allowed by TS.

(6) Vulnerability to Loss of Offsite Power

Assume that during a design review it is found that a loss of offsite power could cause a

loss of instrument air and, as a result, auxiliary feedwater (AFW) flow control valves could fail open. Then for low steam generator pressure, such as could occur for certain main steam line breaks, high AFW flow rates could result in tripping the motor driven AFW pumps on thermal overload. Therefore, the motor-driven AFW pumps are determined to be inoperable. The single turbine driven AFW pump is not be affected.

An LER would be required because the motor-driven portion of AFW was inoperable for a period of time longer than allowed by the technical specifications.

### 3.2.3 Deviation from Technical Specifications under §50.54(x)

§50.72(b)(1)	§50.73(a)(2)(i)(C)
<p>"...<del>A</del>ny deviation from the plant's technical specifications authorized pursuant to §50.54(x) of this part.."</p>	<p>"Any deviation from the plant's <del>T</del>technical <del>S</del>specifications authorized pursuant to <del>§50</del>Sec. 50.54(x) of this part."</p>

An LER is required for a deviation authorized pursuant to Section 50.54(x). If not reported under §50.72(a), an ENS notification is also required.

#### Discussion

10 CFR 50.54(x) generally permits licensees to take reasonable action in an emergency even though the action departs from the license conditions or plant technical specifications if (1) the action is immediately needed to protect the public health and safety, including plant personnel, and (2) no action consistent with the license conditions and technical specifications is immediately apparent that can provide adequate or equivalent protection. Deviations authorized pursuant to 10 CFR 50.54(x) are reportable under this criterion.

#### Example

With the plant at 100-percent power, the upper containment airlock inner door was opened to allow a technician to exit from the containment while the upper airlock outer door was inoperable, resulting in the loss of containment integrity. The upper airlock door was inoperable pending retests following seal replacement. The technician was inside containment when the lower airlock failed, requiring the technician to exit through the upper door.

The licensee decided to exercise the option allowed for under 10 CFR 50.54(x) and open the upper containment airlock inner door. In this instance, immediate action was considered necessary to protect the safety of the technician. The upper airlock was not scheduled to be returned to operability for another 20 hours and the time to repair the lower airlock door was unknown.

When the action was completed the control room operators notified the NRC Operations Center, in accordance with the reporting requirements of 10 CFR 50.72, that they had exercised 10 CFR 50.54(x). Subsequently, an LER was required in accordance with 10 CFR 50.73(a)(2)(i) {use of 10 CFR 50.54(x)} as well as 10 CFR 50.73(a)(2)(v) {event or condition that could have prevented ....}.

### 3.2.4 Degraded or Unanalyzed Condition

§50.72(b)(2)(ii)	§50.73(a)(2)(ii)
<p>"Any event or condition <del>during operation</del> that results in-t:</p> <p><del>(A) The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or results in-t</del></p> <p><del>(B) The nuclear power plant being in an unanalyzed condition that significantly compromises</del><u>degrades</u> plant safety.</p> <p><del>—(B) In a condition that is outside the design basis of the plant; or</del></p> <p><del>—(C) In a condition not covered by the plant's operating and emergency procedures."</del></p>	<p>"Any event or condition that resulted in-t:</p> <p><del>(A) The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or that resulted in-t</del></p> <p><del>(AB) The nuclear power plant being in an unanalyzed condition that significantly compromised</del><u>degraded</u> plant safety;<sub>2</sub></p> <p><del>—(B) In a condition that was outside the design basis of the plant; or</del></p> <p><del>—(C) In a condition not covered by the plant's operating and emergency procedures."</del></p> <p><u>(C) The ability of independent trains or channels to perform their specified safety functions being degraded as a result of a single cause or condition that is worsening such that it is necessary to correct the cause or condition in order to ensure the trains' or channels' ability to perform their specified safety functions.</u></p>

An LER is required for a seriously degraded principal safety barrier or an unanalyzed condition that significantly degrades plant safety. If not reported under §50.72(a), (b)(1), or (b)(2) an ENS notification is also required. In addition, an LER is required if the ability of independent trains or channels to perform their specified safety functions being degraded as a result of a single cause or condition that is worsening such that it is necessary to correct the cause or condition in order to ensure the trains' or channels' ability to perform their specified safety functions.

#### Discussion

##### (A) Nuclear power plant, including its principal safety barriers, being seriously degraded:

This criterion applies to material (e.g., metallurgical or chemical) problems that cause abnormal degradation of or stress upon the principal safety barriers (i.e., the fuel cladding, reactor coolant system pressure boundary, or the containment) such as:

- (1) Fuel cladding failures in the reactor, or in the storage pool, that exceed expected values, or that are unique or widespread, ~~or that are caused by unexpected factors.~~
- (2) Welding or material defects in the primary coolant system which cannot be found acceptable under ASME Section XI, IWB-3600, "Analytical Evaluation of Flaws" or ASME Section XI, Table IWB-3410-1, "Acceptance Standards."

(3) Serious steam generator tube degradation.<sup>(6)</sup>

(4) Low temperature over pressure transients where the pressure-temperature relationship violates pressure-temperature limits derived from Appendix G to 10 CFR Part 50 (e.g., TS pressure-temperature curves).

(5) Loss of containment function or integrity, including containment leak rate tests where the total containment as-found, minimum-pathway leak rate exceeds the limiting condition for operation (LCO) in the facility's TS.<sup>(7)</sup>

(B) Unanalyzed condition that significantly affects plant safety:

As was indicated in the 1983 Statements of Considerations for 10 CFR 50.72 and 50.73, with regard to an *Unanalyzed condition that significantly compromises plant safety*, "The Commission recognizes that the licensee may use engineering judgment and experience to determine whether an unanalyzed condition existed. It is not intended that this paragraph apply to minor variations in individual parameters, or to problems concerning single pieces of equipment. For example, at any time, one or more safety-related components may be out of service due to testing, maintenance, or a fault that has not yet been repaired. Any trivial single failure or minor error in performing surveillance tests could produce a situation in which two or more often unrelated, safety-grade components are out-of-service. Technically, this is an unanalyzed condition. However, these events should be reported only if they involve functionally related components or if they significantly compromise plant

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<sup>(6)</sup> Steam generator tube degradation is considered serious if the tubing fails to meet the following two performance criteria:

• Steam generator tubing shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cooldown and all anticipated transients included in the design specification) and design basis accidents. This includes retaining a margin of 3.0 against burst under normal steady state full power operation and a margin of 1.4 against burst under the limiting design basis accident concurrent with a safe shutdown earthquake.

• The primary to secondary accident induced leakage rate for the limiting design basis accident, other than a steam generator tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage rate for all steam generators and leakage rate for an individual steam generator. The licensing basis accident analyses typically assume a 1 g.p.m. primary to secondary leak rate per steam generator, except for specific types of degradation at specific locations where the tubes are confined, as approved by the NRC and enumerated in conjunction with the list of approved repair criteria in the licensee's design basis documents.

<sup>(7)</sup> The LCO typically employs  $L_a$ , which is defined in Appendix J to 10 CFR Part 50 as the maximum allowable containment leak rate at pressure  $P_a$ , the calculated peak containment internal pressure related to the design basis accident. Minimum-pathway leak rate means the minimum leak rate that can be attributed to a penetration leakage path; for example, the smaller of either the inboard or outboard valve's individual leak rates.

safety."<sup>(8)</sup>

"When applying engineering judgment, and there is a doubt regarding whether to report or not, the Commission's policy is that licensees should make the report."<sup>(9)</sup>

"For example, small voids in systems designed to remove heat from the reactor core which have been previously shown through analysis not to be safety significant need not be reported. However, the accumulation of voids that could inhibit the ability to adequately remove heat from the reactor core, particularly under natural circulation conditions, would constitute an unanalyzed condition and would be reportable."<sup>(10)</sup>

"In addition, voiding in instrument lines that results in an erroneous indication causing the operator to misunderstand the true condition of the plant is also an unanalyzed condition and should be reported."<sup>(11)</sup>

Furthermore, beyond the examples given in 1983, examples events reportable as a condition outside the design basis of the plant an unanalyzed condition that significantly degraded plant safety would include discovery that a system required to meet the single failure criterion does not do so.

In another example, if fire barriers are found to be missing, such that the required degree of separation for redundant safe shutdown trains is lacking, the event would be reportable as a condition outside the design basis of the plant an unanalyzed condition that significantly degraded plant safety. On the other hand, if a fire wrap, to which the licensee has committed, is missing from a safe shutdown train but another safe shutdown train is available in a different fire area, protected such that the required separation for safe shutdown trains is still provided, the event would not be reportable.

(C) Common cause degradation of independent trains or channels: This criterion requires reporting of an event or condition that results in the ability of independent trains or channels to perform their specified safety functions being degraded as a result of a single cause or condition that is worsening such that it is necessary to correct the cause or condition in order to ensure the trains' or channels' ability to perform their specified safety functions. Events of this type indicate a condition where the NRC needs to consider taking action to ensure the condition is addressed at other plants as appropriate. That is, if the condition requires correction for multiple trains or channels at one plant, it may require action at other plants as well. For events of this type, the "reporting clock" does not start until it is determined that it the condition is worsening such that is necessary to correct the cause or condition in independent trains or channels in order to ensure their ability to perform their specified safety functions. It is not possible to know whether an event is reportable under this criterion until that point is reached.

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<sup>(8)</sup> 48 FR 39042, August 29, 1983 and 48 FR 33856, July 26, 1983.

<sup>(9)</sup> 48 FR 39042, August 29, 1983.

<sup>(10)</sup> 48 FR 39042, August 29, 1983 and 48 FR 33856, July 26, 1983.

<sup>(11)</sup> 48 FR 39042, August 29, 1983 and 48 FR 33856, July 26, 1983.

Once the determination is made, a written LER is required within 60 days.

For example, at one plant the walls that protect EDG exhaust piping were significantly degraded. Concrete was falling from the walls. They were substantially thinner than required and could not stop a design basis tornado missile as required. Pending correction of the condition by the addition of steel plates, the EDGs were determined to be operable based on the following -- tornado missile penetration, if it should occur, would probably not prevent the EDGs from working. The event would be captured by this criterion because the ability of independent trains to perform their specified safety functions was degraded as a result of a single condition that was worsening such that it was necessary to correct the condition in order to ensure their ability to perform their specified safety functions.

In another example, a motor operated valve in one train of the RHR/LPCI system was found with a crack 75% through the stem. The root cause was environmentally assisted stress corrosion cracking. This resulted from installation of an inadequate stem material, in both trains, as part of a plant modification package, about 14 years earlier. Pending replacement with better material, the valve stems in both trains were replaced with new ones of the same material, which provided considerable time before failure could be expected. The event would be captured by this criterion because the ability of independent trains to perform their specified safety functions was degraded as a result of a single cause or condition that was worsening such that it was necessary to correct the cause or condition in order to ensure the trains' continued ability to perform their specified safety functions.

### Examples

#### (1) Significant Degradation-Failures of Reactor Fuel Rod Cladding Identified During Testing of Fuel Assemblies

Radio-chemistry data for a particular PWR indicated that a number of fuel rods had failed during the first few months of operation. Projections ranged from 6 to 12 failed rods. The end of cycle reactor coolant system iodine-131 activity averaged 0.025 micro curies per milliliter. Following the end of cycle shutdown, iodine-131 spiked to 11.45 micro curies per milliliter. The cause was due to a significant number of failed fuel rods. Inspections revealed that 136 of the total 157 fuel assemblies contained failed fuel (approximately 300 fuel rods had through-wall penetrations), far exceeding the anticipated number of failures. The defects were generally pinhole sized. The fuel cladding failures were caused by long-term fretting from debris that became lodged between the lower fuel assembly nozzle and the first spacer grid, resulting in penetration of the stainless-steel fuel cladding. The source of the debris was apparently a machining byproduct from the thermal shield support system repairs during the previous refueling outage.

An ENS notification is required because a principal safety barrier (the fuel cladding) was found seriously degraded. An LER is required. The event is reportable because the cladding failures exceed expected values, and are unique or widespread.

#### (2) Reactor Coolant System Pressure Boundary Degradation due to Corrosion of a Control Rod Drive Mechanism Flange

While the plant was in hot shutdown, a total of six control rod drive mechanism (CRDM) reactor vessel nozzle flanges were identified as leaking. Subsequently one of the flanges was found eroded and pitted. While removing the nut ring from beneath the flange, it was discovered that approximately 50 percent of one of the nut ring halves had corroded away and that two of the four bolt holes in the corroded nut ring half were degraded to the point where there was no bolt/thread engagement.

An inspection of the flanges and spiral wound gaskets, which were removed from between the flanges, revealed that the cause of the leaks was the gradual deterioration of the gaskets from age. A replacement CRDM was installed and the gaskets on all six CRDMs were replaced with new design graphite-type gaskets.

~~An ENS notification is required because the condition caused a significant degradation of the RGS pressure boundary. An LER is required. The event is reportable because there is a material defect in the primary coolant system which cannot be found acceptable under ASME Section XI.~~

(3) Significant Degradation of Reactor Fuel Rod Cladding Identified During Fuel Sipping Operations

With the plant in cold shutdown, fuel sipping operations appeared to indicate a significant portion of cycle 2 fuel, type "LYP," had failed, i.e., four confirmed and twelve potential fuel leakers. The potential fuel leakers had only been sipped once prior to making the ENS notification. The licensee contacted the fuel vendor for assistance on-site in evaluating this problem.

An ENS notification was made because the fuel cladding degradation was thought to be widespread. However, additional sipping operations and a subsequent evaluation by the licensee's reactor engineering department with vendor assistance concluded that no additional fuel failures had occurred, i.e., the abnormal readings associated with the potential fuel leakers was attributed to fission products trapped in the crud layer. Based on the results of the evaluation the licensee concluded that the fuel cladding was not seriously degraded and that the event was not reportable. Consequently, after discussion with the Regional Office, the licensee appropriately retracted this event.

### 3.2.5 External Threat or Hampering

<b>§50.72</b>	<b>§50.73(a)(2)(iii)</b>
<u>Events that involve an actual threat or significant hampering should be evaluated for declaration of an emergency class. Declaration of an emergency class is reportable under §50.72(a)(1)(i).</u>	"Any natural phenomenon or other external condition that posed an actual threat to the safety of the nuclear power plant or significantly hampered site personnel in the performance of duties necessary for the safe operation of the nuclear power plant."

An LER is required for any natural phenomenon or other external condition that poses an actual threat to the safety of the nuclear power plant or significantly hampers site personnel in the performance of duties necessary for the safe operation of the plant.

#### Discussion

These criteria apply only to acts of nature (e.g., tornadoes, earthquakes, fires, lightning, hurricanes, floods) and external hazards (i.e., industrial or transportation accidents). References to acts of sabotage are covered by 10 CFR 73.71. Actual threats or significant hampering from internal hazards are covered by a separate criterion in §50.73(a)(2)(ix), as discussed in Section 3.2.10 of this report.

The phrase "actual threat to safety of the nuclear power plant" is one reporting trigger. This covers those events involving an actual threat to the plant from an external condition or natural phenomenon where the threat or damage challenges the ability of the plant to continue to operate in a safe manner (including the orderly shutdown and maintenance of shutdown conditions).

The licensee should decide if a phenomenon or condition actually threatens the plant. For example, a minor brush fire in a remote area of the site that is quickly controlled by fire fighting personnel and, as a result, did not present a threat to the plant should not be reported. However, a major forest fire, large-scale flood, or major earthquake that presents a clear threat to the plant should be reported. As another example, an industrial or transportation accident which occurs near the site, creating a plant safety concern, should be reported.

The licensee must use engineering judgment to determine if there was an actual threat. For example, with regard to tornadoes the decision would be based on such factors as the size of the tornado, and its location and path. There are no prescribed limits. In general, situations involving only monitoring by the plant's staff are not reportable, but if preventive actions are taken or if there are serious concerns, then the situation should be carefully reviewed for reportability.

Responsive actions, by themselves, do not necessarily indicate actual threats. Those which are purely precautionary, such as placement of sandbags, even though flood levels are not

expected to be high enough to require sandbags, do not trigger reporting.

~~Some natural phenomena such as floods may be accurately predicted. If there is a credible prediction of a flood that would challenge the ability of the plant to continue to operate safely, the threat is reportable as an actual threat via ENS as soon as practical and in all cases within four hours.~~

Section 3.2.10 of this report discusses the meaning of the phrase "significantly hampers site personnel in the performance of duties necessary for the safe operation of the plant," in the context of internal threats. A natural phenomenon or external condition may also significantly hamper personnel. If so, it is reportable under this criterion.

If a snowstorm, hurricane or similar event significantly hampers personnel in the conduct of activities necessary for the safe operation of the plant, the event is reportable. In the case of snow, the licensee must use judgment based on the amount of snow, the extent to which personnel were hampered, the extent to which additional assistance could have been available in an emergency, the length of time the condition existed, etc. For example, if snow prevented shift relief for several hours, the situation would be reportable if the delay were such that site personnel were significantly hampered in the performance of duties necessary for safe operation. For example, shift personnel might exceed normal shift overtime limits, become excessively fatigued, or find it necessary to operate with fewer than the required number of watch-standers in order to allow some to rest.

### Examples

#### (1) Earthquake

Seismic alarms were received in the Unit 1 control room of a Southern California plant. Seismic monitors were not tripped in Units 2 or 3. The earthquake was readily felt on site. Seismic instrumentation measured less than 0.02 g lateral acceleration.

The licensee classified this as an Unusual Event in accordance with the emergency plan and notified the NRC via ENS per §50.72(a)(1)(i) within 30 minutes of the earthquake. The licensee terminated the event after walk-downs of the plant were satisfactorily completed and made an ENS update call. No LER was submitted because the event was not considered to be an actual threat.

#### (2) Hurricane

A licensee in southern Florida declared an Unusual Event after a hurricane warning was issued by the National Hurricane Center. The hurricane was predicted to reach the site in approximately 24 hours. As part of the licensee's severe weather preparations both operating units were taken to hot shutdown before the hurricane's predicted arrival. Offsite power to both units was lost. As the hurricane approached, wind velocity on site was measured in excess of 140 mph. All personnel were withdrawn to protected safety-related structures. Extensive damage occurred on site. The Unusual Event was upgraded to an Alert when the pressurized fire header was lost because of storm-related damage to the fire protection system water supply piping and electric pump. All safety-related equipment

functioned as designed before, during, and after the storm with the exception of two minor emergency diesel generator anomalies. The licensee downgraded the Alert to an Unusual Event once offsite power was restored and a damage assessment completed.

An ENS notification was required because the licensee declared an emergency class. An LER was required, based on the occurrence of a natural phenomenon that posed an actual threat and several other reporting criteria as well.

(3) Fire

With the unit at 100-percent power, the control room was notified that a forest fire was burning west of the plant close to the 230-kV distribution lines. Approximately 15 minutes later, voltage fluctuations were observed and then a full reactor scram occurred. The licensee determined that the offsite distribution breakers had tripped on fault, apparently from heavy smoke and heat in the vicinity of the offsite 230-kV line insulators. The other source of offsite power, i.e., the 34.5-kV lines supplying the startup transformers, was also lost. Both station emergency diesel generators received a fast start signal and load sequenced as designed. Five minutes later, offsite power was available through the startup transformer to the non-safety-related 4160-v buses, but the licensee decided to maintain the vital buses on their emergency power source until the reliability of offsite power could be assured. The fire continued to burn and, although no plant structures or equipment were directly affected, the fire did approach within 70 feet of the fire pump house.

An ENS notification was required because the licensee entered the emergency plan, declaring an Unusual Event based on high drywell temperature and an Alert based on the potential of the forest fire to further affect the plant. An LER was required, based on the occurrence of natural phenomenon that posed an actual threat and several other reporting criteria as well.

### 3.2.6 Actuation of an Engineered Safety Feature (ESF)

§50.72(b)(2)(iv)	§50.73(a)(2)(iv)
<p>"(A) Any event that results or should have resulted in emergency core cooling system (ECCS) discharge into the reactor coolant system as a result of a valid signal.</p> <p><u>(B) Any event or condition that results in a valid automatic or intentional manual actuation of the reactor protection system (RPS) when the reactor is critical except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation."</u></p>	<p>"Any event or condition that resulted in a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS), except when:</p> <p>(A) The actuation resulted from and was part of a pre-planned sequence during testing or reactor operation;</p> <p>(B) The actuation was invalid and;</p> <p>(1) Occurred while the system was properly removed from service;</p> <p>(2) Occurred after the safety function had been already completed; or</p> <p>(3) Involved only the following specific ESFs or their equivalent systems:</p> <p>(i) Reactor water clean-up system;</p> <p>(ii) Control room emergency ventilation system;</p> <p>(iii) Reactor building ventilation system;</p> <p>(iv) Fuel building ventilation system;</p> <p>or</p> <p>(v) Auxiliary building ventilation."</p>
<p><b>§50.72(b)(3)(iv)</b></p> <p>"Any event or condition that results in a <del>manual or valid automatic or intentional manual</del> actuation of any engineered safety feature (ESF), including the reactor protection system (RPS), except when:</p> <p>— (A) <del>T</del> the actuation results from and is part of a pre-planned sequence during testing or reactor operation;."</p>	

**Any manual or automatic actuation of any ESF, including RPS** is reportable under §50.73(a)(2)(iv) unless:

- (A) The actuation resulted from and was part of a pre-planned sequence; or
- (B) The actuation was invalid; and
  - (1) Occurred while the system was properly removed from service;
  - (2) Occurred after the safety function had been already completed; or
  - (3) Involved only the specific listed ESFs or their equivalent systems.

As indicated in §50.73(a)(1), in the case of an invalid actuation of an engineered safety feature (ESF) reported under section 50.73(a)(2)(iv) the licensee may, at its option, provide a telephone notification to the NRC Operations Center within 60 days after discovery of the event instead of submitting a written LER.

If not reported under §50.72(a) or (b)(1), an ENS notification is required under (b)(2) for:

- (A) A valid ECCS signal** that results or should have resulted in ECCS injection; or
- (B) A valid automatic or intentional manual scram when the reactor is critical** unless it results from and is part of a pre-planned sequence.

If not reported under §50.72(a), (b)(1), or (b)(2) an ENS notification is required under (b)(3) for a valid automatic or intentional manual actuation of any ESF unless it results from and is

part of a pre-planned sequence.

### Discussion

~~The Statements of Considerations indicate that this~~ These paragraphs require events to be reported whenever an ESF actuates either manually or automatically, ~~regardless of plant status. It is~~ They are based on the premise that these systems are provided to mitigate the consequences of a significant event and, therefore: (1) they should work properly when called upon, and (2) they should not be challenged frequently or unnecessarily. The Commission is interested both in events where a system was needed to mitigate the consequences of an event (whether or not the equipment performed properly) and events where a system actuated unnecessarily.

~~In discussing the reporting of actuations which are part of preplanned procedures, the Statements of Considerations also state that~~ Actuations that need not be reported are those initiated for reasons other than to mitigate the consequences of an event (e.g., at the discretion of the licensee as part of a preplanned procedure).

~~This indicates an~~ The intent is to require reporting actuation of systems that mitigate the consequences of significant events. Usually, the staff would not consider this to include single component actuations because single components of complex systems, by themselves, usually do not mitigate the consequences of significant events. However, in some cases a component would be sufficient to mitigate the event (i.e., perform the safety function) and its actuation would, therefore, be reportable. This position is consistent with the statement that the reporting requirement is based on the premise that these systems are provided to mitigate the consequences of a significant event.

Single trains do mitigate the consequences of events, and, thus, train level actuations are reportable.

In this regard, the staff considers actuation of a diesel-generator to be actuation of a train--not actuation of a single component -- because a diesel generator mitigates the event (performs the safety function for plants at which diesel generators are classified as ESF systems). (See Example 3 below.)

The staff also considers intentional manual actions, in which one or more ESF components are actuated in response to actual plant conditions resulting from equipment failure or human error, to be reportable because such actions would usually mitigate the consequences of a significant event. This position is consistent with the statement that the Commission is interested in events where a system was needed to mitigate the consequences of the event. For example, starting a safety injection pump in response to a rapidly decreasing pressurizer level or starting HPCI in response to a loss of feedwater would be reportable. However, shifting alignment of makeup pumps or closing a containment isolation valve for normal operational purposes would not be reportable.

~~The Statement of Considerations also indicates that~~ Actuation of multichannel ESF actuation systems is defined as actuation of enough channels to complete the minimum actuation logic. Therefore, single channel actuations, whether caused by failures or otherwise, are not

reportable if they do not complete the minimum actuation logic. Note, however, that if only a single logic channel actuates when, in fact, the system should have actuated in response to plant parameters, this would be reportable. The event would be reportable under these criteria (ESF actuation) as well as under 10 CFR 50.72(b)(2)(iii) and 10 CFR 50.73(a)(2)(v) (event or condition that could have prevented the fulfillment of the safety function of ....). This position is consistent with the statement that the Commission is interested in events where an ESF was needed to mitigate the consequences, whether or not the equipment performed properly.

With regard to preplanned actuations, ~~the Statements of Consideration indicate that operation of a system~~ as part of a planned test or operational evolution need not be reported. Preplanned actuations are those which are expected to actually occur due to preplanned activities covered by procedures. Such actuations are those for which a procedural step or other appropriate documentation indicates the specific ~~ESF actuation that is~~ actually expected to occur. Control room personnel are aware of the specific signal generation before its occurrence or indication in the control room. However, if during the test or evolution, the system actuates in a way that is not part of the planned evolution, that actuation should be reported. For example, if the normal reactor shutdown procedure requires that the control rods be inserted by a manual reactor scram, the reactor scram need not be reported. However, if unanticipated conditions develop during the shutdown that cause an automatic reactor scram, such a reactor scram should be reported. The fact that the safety analysis assumes that a system will actuate automatically during an event does not eliminate the need to report that actuation. Actuations that need not be reported are those initiated for reasons other than to mitigate the consequences of an event (e.g., at the discretion of the licensee as part of a planned evolution).

Note that if an operator were to manually scram the reactor in anticipation of receiving an automatic reactor scram, this would be reportable just as the automatic scram would be reportable.

Valid ~~ESF~~ actuations are those actuations that result from "valid signals" or from intentional manual initiation, unless it is part of a preplanned test. Valid signals are those signals that are initiated in response to actual plant conditions or parameters satisfying the requirements for initiation of the safety function of the system. ~~Note this definition of "valid" requires that the initiation signal must be an ESF signal. This distinction eliminates actuations.~~ They do not include those which are the result of other signals from the class of ~~valid~~ actuations. Invalid actuations are, by definition, those that do not meet the criteria for being valid. Thus, invalid actuations include actuations that are not the result of valid signals and are not intentional manual actuations.

In general, invalid actuations are not reportable by telephone under §50.72. In addition, invalid actuations are not reportable under §50.73 in any of the following circumstances:

- (A) The invalid actuation occurred when the system is already properly removed from service. This means all requirements of plant procedures for removing equipment from service have been met. It includes required clearance documentation, equipment and control board tagging, and properly positioned valves and power supply breakers.
- (B) The invalid actuation occurred after the safety function has already been completed. An example would be RPS actuation after the control rods have already been inserted into the core.

- (C) The invalid actuation involved only specific systems or their equivalent systems. These systems are the reactor water clean up system in boiling water reactors (BWRs), the control room emergency ventilation system, the reactor building ventilation system (RBVS), the fuel building ventilation system, and the auxiliary building ventilation system. Actuations for these specific systems due to signals that originated from non-ESF circuitry are invalid and, thus, not reportable. For BWRs, the actuation of the standby gas treatment system following an invalid actuation of the RBVS is not reportable. Invalid actuations of ESF systems other than those listed are reportable.

If an invalid ESF-actuation reveals a defect in the ESF-system so the system failed or would fail to perform its intended function, the event continues to be reportable under other requirements of 10 CFR 50.72 and 50.73. When invalid ESF-actuations excluded by the conditions described above occur as part of a reportable event, they should be described as part of the reportable event, in order to provide a complete, accurate and thorough description of the event.

### Examples

#### (1) RPS Actuation

- The licensee was placing the residual heat removal (RHR) system in its shutdown cooling mode while the plant was in hot shutdown. The BWR vessel level decreased for unknown reasons, causing RPS scram and Group III primary containment isolation signals, as designed. All control rods had been previously inserted and all Group III isolation valves had been manually isolated. The licensee isolated RHR to stop the decrease in reactor vessel level.

This event is reportable because, although the systems' safety functions had already been completed, the RPS scram and primary containment isolation signals were valid and the actuations were not part of the planned procedure. The automatic signals were valid because they were generated from the sensor by measurement of an actual physical system parameter that was at its set point. ~~An LER is required.~~

- With the BWR defueled, an invalid signal actuated the RPS. There was no component operation because the control rod drive system had been properly removed from service. This event is not reportable because (1) the RPS signal was invalid, and (2) the system had been properly removed from service.
- ~~An immediate notification (§50.72) was received from a BWR licensee.~~ At a BWR, both recirculation pumps tripped as a result of a breaker problem. This placed the plant in a condition in which BWRs are generally scrammed to avoid potential power/flow oscillations. At this plant, for this condition, a written off-normal procedure required the plant operations staff to scram the reactor. The plant staff performed a reactor scram which was uncomplicated.

This event is reportable as a manual RPS actuation. Even though the reactor scram was in response to an existing written procedure, this event does not involve a preplanned sequence because the loss of recirculation pumps and the resultant off-normal procedure entry were event driven, not preplanned. An LER is required. In this

case, the licensee initially retracted the ENS notification believing that the event was not reportable. After staff review and further discussion, it was agreed that the event is reportable for the reasons discussed above.

(2) BWR Control Rod Block Monitor Actuation

A rod block that was part of the planned startup procedure occurred from the rod block monitor, which, at this plant, is classified as a portion of the RPS ~~or as an ESF~~.

This event is not reportable because it occurred as a part of a preplanned startup procedure that specified certain rod blocks were expected to occur.

(3) Emergency Diesel Generator (EDG) Starts

- ~~The licensee provided an LER describing an event in which the~~ An EDG automatically started when a technician inadvertently caused a short circuit that de-energized an essential bus during a calibration. The actuation was valid because an essential bus was de-energized. An ENS notification and LER are required because the EDG auto-start (ESF actuation at this plant) was not identified at the step in the calibration procedure being used.
- ~~The licensee provided an LER describing an event in which,~~ After an automatic EDG start, and for unknown reasons, the emergency bus feeder breaker from the EDG did not close when power was lost on the bus. An ENS notification and LER are required because the actuation logic for the EDG start ~~(ESF actuation at this plant)~~ was completed, even though the diesel generator did not power the safety buses.

(4) Preplanned Manual Scram

During a normal reactor shutdown, the reactor shutdown procedure required that reactor power be reduced to a low power at which point the control rods were to be inserted by a manual reactor scram. The rods were manually scrambled.

This event is not reportable because the manual scram results from and is, by procedure, part of a preplanned sequence of reactor operation. However, if conditions develop during the process of shutting down that require an unplanned reactor scram, the RPS actuation (whether manually or automatically produced) is reportable via ENS notification and LER.

(5) Actuation of Wrong Component During Testing

During surveillance testing of the main steam isolation valves (MSIVs), an operator incorrectly closed MSIV "D" when the procedure specified closing MSIV "C."

This event is not reportable because the event is an inadvertent actuation of a single component ~~of an ESF system~~ rather than a train level actuation (and the purpose of the actuation was not to mitigate the consequences of an event).

(6) Control Room Ventilation System (CRVS) Isolation

While the CRVS was in service with no testing or maintenance in progress, a voltage transient caused spiking of a radiation monitor resulting in isolation of the CRVS, as designed.

This event is not reportable under this criterion because the event is due to an invalid signal and involves one of the four excepted systems (CRVS).

(7) Reactor Water Cleanup (RWCU) Isolations

- The RWCU isolation valves closed in response to high water temperature, as designed. This is a common operational occurrence not indicative of a significant event; the initiation signal for this isolation is a non-ESF signal. As discussed above, this is an invalid actuation because it originates from a non-ESF signal and the event is not reportable because it is an invalid actuation of one of the four excepted systems.
- An RWCU primary containment isolation (ESF actuation) occurred on pressurization between the RWCU suction containment isolation valves during the restoration of the RWCU system after a maintenance outage. An ENS notification and LER are required because a valid ESF signal initiated the RWCU isolation and the actuation was not part of a planned procedure.

(6) Manual Actuation of ESF Component in Response to Actual Plant Condition

At a PWR, maintenance personnel inadvertently pulled an instrument line out of a compression fitting connection at a pressure transmitter. The resultant reactor coolant system (RCS) leak was estimated at between 70 and 80 g.p.m. Charging flow increased due to automatic control system action. The operations staff recognized the symptoms of an RCS leak and entered the appropriate off-normal procedure. The procedure directed the operations staff to start a second charging pump and flow was manually increased to raise pressurizer level. Based on the response of the pressurizer level, the operations staff determined that a reactor scram and safety injection were not necessary. Maintenance personnel still at the transmitter closed the instrument block and root valves terminating the event.

The staff considers the manual start of the charging pump (which also serves as an ECCS pump, but with a different valve lineup) in response to dropping pressurizer level to be an intentional manual actuation of an ESF in response to equipment failure or human error and reportable because it constitutes deliberate manual actuation of a single component of an ESF, in response to plant conditions, to mitigate the consequences of an event. ~~As indicated in the Statements of Considerations for the rules~~ As discussed previously in this section, actuations that need not be reported are those that are initiated for reasons other than to mitigate the consequences of an event (e.g., at the discretion of the licensee as part of a planned procedure or evolution).

(7) ESF Actuation During Maintenance Activity

At a BWR, a maintenance activity was under way involving placement of a jumper to avoid ESF unintended actuations. The maintenance staff recognized that there was a high potential for a loss of contact with the jumper and consequent ESF actuation. This

potential was explicitly stated in the maintenance work request and on a risk evaluation sheet. The operating staff was briefed on the potential ESF-actuators prior to start of work. During the event, a loss of continuity did occur and the ESF-actuators occurred, involving isolation, standby gas treatment start, closing of some valves in the primary containment isolation system (recirculation pump seal mini-purge valve, nitrogen supply to drywell valve, and containment atmospheric monitoring valve)-occurred.

The event is not reportable under §50.72(b)(2)(iv) or (b)(3)(iv) because the actuators were not valid. It is reportable under §50.73(a)(2)(iv) because the actuators were not listed as (and were not) definitely expected to occur.

**3.2.7 Event or Condition That Could Have Prevented Fulfillment of the Safety Function of Structures or Systems**

<p><b>§50.72(b)(3)(v)</b></p> <p>"Any event or condition that <del>alone</del> <u>at the time of discovery</u> could have prevented the fulfillment of the safety function of structures or systems that are needed to:</p> <p>(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."</p>	<p><b>§50.73(a)(2)(v)</b></p> <p>"Any event or condition that <del>alone</del> could have prevented the fulfillment of the safety function of structures or systems that are needed to:</p> <p>(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."</p>
<p><b>§50.72(b)(3)(vi)</b></p> <p><u>"Events covered in paragraph (b)(3)(v) of this section 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 pursuant to this paragraph if redundant equipment in the same system was operable and available to perform the required safety function."</u></p> <p><del>{The Statement of Considerations for 10 CFR 50.72 contains wording similar to those of §50.73(a)(2)(vi).}</del></p>	<p><b>§50.73(a)(2)(vi)</b></p> <p>"Events covered in paragraph (a)(2)(v) of this section may include one or more procedural personnel errors, equipment failures, and/or discovery of design, analysis, fabrication, construction, and/or procedural inadequacies. However, individual component failures need not be reported pursuant to this paragraph if redundant equipment in the same system was operable and available to perform the required safety function."</p>

An LER is required for an event or condition that could have prevented the fulfillment of the safety function of structures and systems defined in the rules. If the event or condition could have prevented fulfillment of the safety function at the time of discovery, and if it is not reported under §50.72(a), (b)(1), or (b)(2), an ENS notification is required under (b)(3).

**Discussion**

The level of judgment for reporting an event or condition under this criterion is a reasonable expectation of preventing fulfillment of a safety function. In the discussions which follow, many of which are taken from ~~the Statement of Considerations or from~~ previous NUREG guidance, several different expressions such as "would have," "could have," "alone could have," and "reasonable doubt" are used to characterize this standard. In the staff's view, all of these should be judged on the basis of a reasonable expectation of preventing fulfillment of the safety

function.

~~As indicated in the Statement of Considerations, The intent of these criteria is to capture those events where there would have been a failure of a safety system to properly complete a safety function, regardless of when the failures were discovered or whether there was an actual demand. For example, if the high pressure safety injection system (both trains) failed, the event would be reportable even if there was no demand for the system's safety function.~~

If the event or condition could have prevented fulfillment of the safety function at the time of discovery an ENS notification is required. If it could have prevented fulfillment of the safety function at any time within three years of the date of discovery an LER is required.

These criteria cover an event or condition where structures, components, or trains of a safety system could have failed to perform their intended function because of: one or more personnel errors, including procedure violations; equipment failures; inadequate maintenance; or design, analysis, fabrication, equipment qualification, construction, or procedural deficiencies. The event must be reported regardless of whether or not an alternate safety system could have been used to perform the safety function ~~(e.g., high pressure core cooling failed, but feed-and-bleed or low pressure core cooling were available to provide the safety function of core cooling).~~ For example, if the onsite power system failed the event would be reportable, even if the offsite power system remained available and capable of performing the required safety function.

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."

In determining the reportability of an event or condition that affects a system, it is not necessary to assume an additional random single failure in that system; however, it is necessary to consider other existing plant conditions. (See Example [4] below).

The term "safety function" refers to any of the four functions (A through D) listed in these reporting criteria that are required during any plant mode or accident situation as described or relied on in the plant safety analysis report or required by the regulations.

A system must operate long enough to complete its intended safety function as defined in the safety analysis report. Generic Letter 91-18 provides guidance on determining whether a system is operable. ~~Reasonable operator actions to correct minor problems may be considered; however, heroic actions and unusually perceptive diagnoses, particularly during stressful situations, should not be assumed. If a potentially serious human error is made that could have prevented fulfillment of a safety function, but recovery factors resulted in the error being corrected, the error is still reportable.~~

Both offsite electrical power (transmission lines) and onsite emergency power (usually diesel generators) are considered to be separate functions by GDC 17. If either offsite power or onsite emergency power is unavailable to the plant, it is reportable regardless of whether the other system is available. GDC 17 defines the safety function of each system as providing sufficient capacity and capability, etc., assuming that the other system is not available. Loss of offsite power should be determined at the essential switchgear busses.

~~As indicated in the Statement of Considerations: "The Commission recognizes that the application of this and other paragraphs of this section involves~~ The application of these and other reporting criteria involves the use of engineering judgment. In this case, a technical judgment must be made whether a failure or operator action that did actually disable one train of a safety system, could have, but did not, affect a redundant train within the system. If so, this would constitute an event that "could have prevented" the fulfillment of a safety function, and, accordingly, must be reported.

If a component fails by an apparently random mechanism it may or may not be reportable if the functionally redundant component could fail by the same mechanism. Reporting is required if the failure constitutes a condition where there is reasonable doubt that the functionally redundant train or channel would remain operational until it completed its safety function or is repaired. For example, if a pump in one train of an ESF system fails because of improper lubrication, and engineering judgment indicates that there is a reasonable expectation that the functionally redundant pump in the other train, which was also improperly lubricated, would have also failed before it completed its safety function, then the actual failure is reportable and the potential failure of the functionally redundant pump must be discussed in the LER.

For systems that include three or more trains, the failure of two or more trains should be reported if, in the judgment of the licensee, the functional capability of the overall system was jeopardized.<sup>(12)</sup>

~~Finally, the Commission recognizes that~~ The licensee may also use engineering judgment to decide when personnel actions could have prevented fulfillment of a safety function. For example, when an individual improperly operates or maintains a component, he might conceivably have made the same error for all of the functionally redundant components (e.g., if he incorrectly calibrates one bistable amplifier in the Reactor Protection System, he could conceivably incorrectly calibrate all bistable amplifiers). However, for an event to be reportable it is necessary that the actions actually affect or involve components in more than one train or channel of a safety system, and the result of the actions must be undesirable from the perspective of protecting the health and safety of the public. The components can be functionally redundant (e.g., two pumps in different trains) or not functionally redundant (e.g., the operator correctly stops a pump in Train "A" and instead of shutting the pump discharge valve in Train "A," he mistakenly shuts the pump discharge valve in Train "B").<sup>(13)</sup>

~~Any time a system did not or could not have performed its safety function because of a single failure, common-mode failure, or combination of independent failures it is reportable under these criteria. These reporting requirements apply to the system level, rather than the train or component level.~~

● ~~Single Failure~~

~~These reporting criteria are not meant to require reporting of a single, independent (i.e., random) component failure that makes only one functionally redundant train inoperative~~

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~~<sup>(12)</sup> 48 FR 33854 and 48 FR 33858, July 26, 1983.~~

~~<sup>(13)</sup> 48 FR 33854 and 48 FR 33858, July 26, 1983.~~

unless it is indicative of a generic problem (i.e., has common-mode failure implications):

As indicated in Paragraph 50.73(a)(2)(vi) "...individual component failures need not be reported pursuant to this paragraph if redundant equipment in the same system was operable and available to perform the required safety function."

A single failure that defeats the safety function of a redundant system is reportable even if the design of the system, which allows such a single failure to defeat the function of the system, has been found acceptable. For example, if a single RHR suction line valve should fail in such a way that RHR cooling cannot be initiated, the event would be reportable.

~~As discussed in the Statement of Considerations,~~ There are a limited number of single-train systems that perform safety functions (e.g., the High Pressure Coolant Injection System in BWRs). For such systems, loss of the single train would prevent the fulfillment of the safety function of that system and, therefore, is reportable even though the plant technical specifications may allow such a condition to exist for a limited time.<sup>(14)</sup>

- ~~• Common-Cause Failures~~ The following conditions are Reportable conditions under these criteria include the following:
  - an event or condition that disabled multiple trains of a system because of a single cause
  - an event or condition where one train of a system is disabled; in addition, (1) the underlying cause that disabled one train of a system could have failed a redundant train and (2) there is reasonable expectation that the second train would not complete its safety function if it were called upon
  - an observed or identified event or condition that alone could have prevented fulfillment of the safety function
- ~~• Multiple equipment inoperability or unavailability~~ Whenever an event or condition exists where the system could have been prevented from fulfilling its safety function because of one or more reasons for equipment inoperability or unavailability, it is reportable under these criteria. This would include cases where one train is disabled and a second train fails a surveillance test.

Reportability of any of the above type failures (single, common-mode, or multiple) under both 10 CFR 50.72 and 50.73 is independent of power or plant mode. It also is independent of whether:

- ~~• the system or structure was demanded at the time of discovery~~
- ~~• the system or structure was required to be operable at the time of discovery~~
- ~~• the cause of a potential failure of the system was corrected before an actual demand for the safety function could occur~~
- ~~• other systems or structures were available that could have or did perform the safety function~~
- ~~• the entire system or structure is specified as ESF or safety related~~
- ~~• the problem occurs in a non-safety portion of a system~~

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<sup>(14)</sup> 48 FR 33854, July 26, 1983.

The following types of events or conditions generally are not reportable under these criteria:

- failures that affect inputs or services to systems that have no safety function (unless it could have prevented the performance of a safety function of an adjacent or interfacing system)
- a ~~single~~ defective component that was delivered, but not installed
- removal of a system or part of a system from service as part of a planned evolution for maintenance or surveillance testing when done in accordance with an approved procedure and the plant's TS (unless a condition is discovered that could have prevented the system from performing its function)
- independent failure of a single component (unless it is indicative of a generic problem, which alone could have caused failure of a redundant safety system failure, ~~or it is in a single-train system~~)
- a procedure error ~~that could have resulted in defeating the system function but was discovered before procedure approval and the error could have resulted in defeating the system function~~
- a failure of a system used only to warn the operator where no credit is taken for it in any safety analysis and it does not directly control any of the safety functions in the criteria
- a single stuck control rod that alone would not have prevented the fulfillment of a reactor shutdown
- unrelated component failures in several different safety systems

The applicability of these criteria includes those safety systems designed to mitigate the consequences of an accident (e.g., containment isolation, emergency filtration). Hence, minor operational events involving a specific component such as valve packing leaks, which could be considered a lack of control of radioactive material, should not be reported under ~~this paragraph~~ these criteria. System leaks or other similar events may, however, be reportable under other ~~sections of the rules criteria.~~<sup>(15)</sup>

A design or analysis defect or deviation is reportable under this criterion if it could have prevented fulfillment of the safety function of structures or systems defined in the rules. Reportability of a design or analysis defect or deviation under this criterion should be judged on the same basis that is used for other conditions, such as operator errors and equipment failures. That is, the condition is reportable if there is a reasonable expectation of preventing fulfillment of the safety function. Alternatively stated, the condition is reportable if there was reasonable doubt that the safety function would have been fulfilled if the structure or system had been called upon to perform it.

## Examples

### SINGLE TRAIN SYSTEMS

#### (1) Failure of a Single-Train System Preventing Accident Mitigation and Residual Heat Removal

When the licensee was preparing to run a surveillance test, a high-pressure coolant injection (HPCI) flow controller was found inoperable; therefore, the licensee declared the HPCI system inoperable. The plant entered a technical specification requiring that the

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<sup>(15)</sup> 48 FR 33854, July 26, 1983.

automatic depressurization, low-pressure coolant injection, core spray, and isolation condenser systems remain operable during the 7-day LCO or the plant had to be shut down.

The licensee made an ENS notification within 28 minutes and a followup call after the amplifier on the HPCI flow transmitter was fixed and the HPCI returned to operability. As discussed above, the loss of a single train safety system such as BWR HPCI is reportable.

(2) Failure of a Single-Train Non-Safety System

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.

(3) Failure of a Single-Train Environmental System

Question: There are a number of environmental systems in a plant dealing with such things as low level waste (e.g., gaseous radwaste tanks). Many of these systems are not required to meet the single failure criterion so a single failure results in the loss of function of the system. Are all of these systems covered within the scope of the LER rule?

Answer: If such systems are required by Technical Specifications to be operational and the system is needed to fulfill one of the safety functions identified in this section of the rule then system level failures are reportable. If the system is not covered by Technical Specifications and is not required to meet the single failure criterion, then failures of the system are not reportable under this criterion.

LOSS OF TWO TRAINS

(4) Loss of Onsite Emergency Power by Multiple Equipment Inoperability and Unavailability

During refueling, one emergency diesel generator (EDG) in a two train system was out of service for maintenance. The second EDG was declared inoperable when it failed its surveillance test.

An ENS notification is required and an LER is required. As addressed in the Discussion section above, loss of either the onsite power system or the offsite power system is reportable under this criterion.

(5) Procedure Error Prevents Reactor Shutdown Function

The unit was in mode 5 (95°F and 0 psig ; before initial criticality) and a post-modification test was in progress on the train A reactor protection system (RPS), when the operator observed that both train A and B source range detectors were disabled. During post-modification testing on train A RPS, instrumentation personnel placed the train B input error

inhibit switch in the inhibit position. With both trains' input error inhibit switches in the inhibit position, source range detector voltage was disabled. The input error inhibit switch was immediately returned to the normal position and a caution was added to appropriate plant instructions.

This event is reportable because disabling the source range detectors could have prevented fulfillment of the safety function to shut down the reactor.

(6) Failure of the Overpressurization Mitigation System

The RCS was overpressurized on two occasions during startup following a refueling outage because the overpressure mitigation system (OMS) failed to operate. The reason that the OMS failed to operate was that one train was out of service for maintenance and a pressure transmitter was isolated and a summator failed in the actuation circuit on the other train.

The event is reportable because the OMS failed to perform its safety function.

(7) Loss of Salt Water Cooling System and Flooding in Saltwater Pump Bay

During maintenance activities on the south saltwater pump, the licensee was removing the pump internals from the casing when flooding of the pump area occurred. The north saltwater pump was secured to prevent pump damage.

The event is reportable because of the failure of the saltwater cooling system, which is the ultimate heat sink for the facility, to perform its safety function.

(8) Maintenance Affecting Two Trains

Question: Some clarification is needed for events or conditions that ~~alone~~ "could have" prevented the fulfillment of a system safety function.

Answer: With regard to maintenance problems, "events or conditions" generally involve operator actions and/or component failures that could have prevented the functioning of a safety system. For example, assume that a surveillance test is run on a standby pump and it seizes. The pump is disassembled and found to contain the wrong lubricant. The redundant pump is disassembled and it also has the same wrong lubricant. Thus, it is reasonable to assume that the second pump would have failed if it had been challenged. However, the second pump and, therefore, the system did not actually fail because the second pump was never challenged. Thus, in this case, because of the use of the wrong lubricant, the system "could have" or "would have" failed.

LOSS OF ONE TRAIN

~~(9) Oversized Breaker Wiring Lugs~~

~~Situation: During testing of 480-volt safety-related breakers, one breaker would not trip electrically. Investigation revealed that one wire of the pigtail on the trip coil, although still in its lug, was so loose that there was no electrical connection. The loose connection was due to the fact that the pigtail lug was too large (No. 14-16 AWG), whereas the pigtail wire was~~

~~No. 20 AWG. A No. 18-22 lug is the acceptable industry standard for a No. 20 AWG wire. Since the trip coils were supplied pre-wired, all safety-related breakers utilizing the trip coil were inspected. All other breakers inspected had No. 14-16 AWG lugs. No lugs were found with loose electrical connections. Nevertheless, all No. 14-16 AWG lugs were replaced with acceptable industry Standard No. 18-22 AWG lugs.~~

~~Comment: The event is reportable because the incompatible pigtails and lugs could have caused one or more safety systems to fail to perform their intended function [50.72(b)(2)(v) and 50.73(a)(2)(v)].~~

(9) Contaminated Hydraulic Fluid Degrades MSIV Operation

Situation: During a routine shutdown, the operator noted that the #11 MSIV closing time appeared to be excessive. A subsequent test revealed the #11 MSIV shut within the required time, however, the #12 MSIV closing time exceeded the maximum at 7.4 sec. Contamination of the hydraulic fluid in the valve actuation system had caused the system's check valves to stick and delay the transmission of hydraulic pressure to the actuator. Three more filters will be purchased providing supplemental filtering for each MSIV. Finer filters will be used in pump suction filters to remove the fine contaminants. The #12 MSIV was repaired and returned to service. Since the valves were not required for operation at the time of discovery, the safety of the public was not affected.

Comments: The event is reportable under 50.73(a)(2)(v) because ~~a single~~ the condition could have prevented fulfillment of a safety function ~~[50.73(a)(2)(v)]~~. ~~The fact that the condition was discovered when the valves were not required for operation does not affect the reportability of the condition. The event is not reportable under 50.72(b)(2)(v) because, at the time of discovery, the plant was shutdown and the MSIV's were not required to be operable.~~

(10) Diesel Generator Lube Oil Fire Hazard

Situation: While performing a routine surveillance test of the emergency diesel generator, a small fire started due to lubricating oil leakage from the exhaust manifold. The manufacturer reviewed the incident and determined that the oil was accumulating in the exhaust manifold due to leakage originating from above the upper pistons of this vertically opposed piston engine. The oil remaining above the upper pistons after shutdown leaked slowly down past the piston rings, into the combustion space, past the lower piston rings, through the exhaust ports, and into the exhaust manifolds. The exhaust manifolds became pressurized during the subsequent startup which forced the oil out through leaks in the exhaust manifold gaskets where it was ignited. Similar events occurred previously at this plant. In these previous cases, fuel oil accumulated in the exhaust manifold due to extended operation under "no load" conditions. Operation under loaded conditions was therefore required before shutdown in order to burn off any accumulated oil.

Comments: The event is not reportable if the fire did not pose a threat to the plant (e.g., it did not significantly hamper site personnel [50.73(a)(2)(ix)]). The event would be reportable if it demonstrates a design, procedural, or equipment deficiency that could have prevented the fulfillment of a safety function (i.e., if the redundant diesels are of similar design and, therefore, susceptible to the same problem) [50.73(a)(2)(vi)].

(11) Single Failures

Question: ~~I notice that loss of relief/safety valve capability is reportable. Does this mean that an LER is required when one valve is inoperative? In addition, Suppose you have one pump in a cooling water system (e.g., chilled water) supplying water to both trains of a safety system, but there is another pump in standby; is the loss of the one operating pump reportable?~~

Answer: No. Single, independent (i.e., random) component failures are not reportable ~~as LERs~~ if the redundant component in the same system did or would have fulfilled the safety function. However, if such failures have generic implications, then an LER is to be submitted. ~~(See the discussion under the heading "Single Failures" for further discussion of reporting the loss of one train.)~~

(12) Generic Set-point Drift

- Situation: With the plant in steady state operation at 2170 MWt and while performing a Main Steam Line Pressure Instrument Functional Test and Calibration, a switch was found to actuate at 853 psig. The Tech Specs limit is 825 +15 psig. The redundant switches were operable. The cause of the occurrence was set point drift. The switch was recalibrated and tested successfully per HNP-2-5279, Barksdale Pressure Switch Calibration, and returned to service. This is a repetitive event as reported in one previous LER. A generic review revealed that these type switches are used on other safety systems and that this type switch is subject to drift. An investigation will continue as to why these switches drift, and if necessary, they will be replaced.

Comments: The event is not reportable due to the drift of a single pressure switch. The event is reportable if it is indicative of a generic and/or repetitive problem with this type of switch which is used in several safety systems [50.73(a)(2)(vi) or (vii)].

- Question: Are set point drift problems with a particular switch to be reported if they are experienced more than once?

Answer: The independent failure (e.g., excessive set point drift) of a single pressure switch is not reportable unless it could have caused a system to fail to fulfill its safety function, or is indicative of a generic problem that could have resulted in the failure of more than one switch and thereby cause one or more systems to fail to fulfill their safety function.

(13) Maintenance Affecting Only One Train

Question: Suppose the wrong lubricant was installed in one pump, but the pump in the other train was correctly lubricated. Is this reportable?

Answer: Engineering judgement is required to decide if the lubricant could have been used on the other pump, and, therefore, the system function would have been lost. If the procedure called for testing of the first pump before maintenance was performed on the second pump and testing clearly identified the error, then the error would not be reportable. However, if the procedure called for the wrong lubricant and eventually both pumps would

have been improperly lubricated, and the problem was only discovered when the first pump was actually challenged and failed, then the error would be reportable.

### OTHER CONDITIONS

#### (14) Conditions Observed While System Out of Service

Question: Suppose during shutdown we are doing maintenance on both SI pumps, which are not required to be operational. Is this reportable? While shutdown, suppose I identify or observe something that would cause the SI pumps not to be operational at power. Is this reportable?

Answer: Removing both SI pumps from service to do maintenance is not reportable if the resulting system configuration is not prohibited by the plant's technical specifications. However, if a situation is discovered during maintenance that could have caused both pumps to fail, (e.g., they are both improperly lubricated) then that condition is reportable even though the pumps were not required to be operational at the time that the condition was discovered. As another example, suppose the scram breakers were tested during shutdown conditions, and it was found that for more than one breaker, opening times were in excess of those specified, or that UV trip attachments were inoperative. Such potential generic problems are reportable in an LER.

#### (15) Diesel Generator Bearing Problems

During the annual inspection of one standby diesel generator, the lower crankshaft thrust bearing and adjacent main bearing were found wiped on the journal surface. The thrust bearing was also found to have a small crack from the main oil supply line across the journal surface to the thrust surface. Inspection of the second, redundant standby diesel generator annual inspection revealed similar problems. It was judged that extended operation without corrective action could have resulted in bearing failure.

The event is reportable because there was reasonable doubt that the diesels would have completed an extended run under load, as required, if called upon.

#### (16) Multiple Control Rod Failures *[moved from Section 2.7 and modified as indicated]*

There have been cases in which licensees have erroneously concluded that not reported multiple, sequentially discovered failures of systems or components occurring during planned testing are not reportable. This situation was identified as a generic concern on April 13, 1985, in NRC Information Notice (IN) 85-27, "Notifications to the NRC Operations Center and Reporting Events in Licensee Event Reports," regarding the reportability of multiple events in accordance with §§50.72(b)(2)(iii) and 50.73(a)(2)(v) (event or condition that ~~alone~~ could have prevented fulfillment of a safety function).

IN 85-27 described multiple failures of a reactor protection system during control rod insertion testing of a reactor at power. One of the control rods stuck. Subsequent testing identified 3 additional rods that would not insert (scram) into the core and 11 control rods that had an initial hesitation before insertion. The licensee considered each failure as a single random failure; thus each was determined not to be reportable. Subsequent

assessments indicated that the instrument air system, which was to be oil-free, was contaminated with oil that was causing the scram solenoid valves to fail. While the failure of a single rod to insert may not cause a reasonable doubt ~~that about the ability of other rods would fail to insert~~, the failure of more than one rod does cause a reasonable doubt ~~that other rods could be affected, thus affecting the safety function of the rods.~~

As indicated in IN 85-27, multiple failures of redundant components of a safety system are sufficient reason to expect that the failure mechanism, even though not known, could have prevented the fulfillment of the safety function.

(17) Potential Loss of High Pressure Coolant Injection

During normal refueling leak testing of the upstream containment isolation check valve on the High Pressure Coolant Injection (HPCI) steam exhaust, the disc of the non-containment isolation check valve was found lodged in downstream piping. This might have prevented HPCI from functioning if the disc had blocked the line. The event was caused by fatigue failure of a disc pin.

Following evaluation of the condition, the event was determined to be reportable because the HPCI could have been prevented from performing its safety function if the disc had blocked the line. In addition, the event is reportable if the fatigue failure is indicative of a common-mode failure.

~~(18) Defective Component Delivered but not Installed~~

~~Question: How should a plant report a defective component that was delivered, but not installed?~~

~~Answer: A single defective component would not generally be reportable (assuming that the problem has no generic implications). A generic problem or a number of defective components would probably constitute a condition that could have prevented fulfillment of a safety function, and, if so, would be reportable. Engineering judgment is required to determine if the defects could have escaped detection prior to installation and operation. As a minimum, any generic problem may be reported as a voluntary LER. In addition, such a condition may be reportable under 10 CFR Part 21.~~

(18) Operator Inaction or Wrong Action

Question: In some systems used to control the release of radioactivity, a detector controls certain equipment. In other systems, a monitor is present and the operator is required to initiate action under certain conditions. The operator is not "wired" in. Are failures of the operator to act reportable?

Answer: Yes. The operator may be viewed as a "component" that is an integral, and frequently essential, part of a "system." Thus, if an event or condition meets the reporting criterion specified in 50.73 for reporting, it is to be reported regardless of the initiating cause. (i.e., whether an equipment, procedure, or personnel error is involved).

(19) Results of Analysis

Question: A number of criteria indicate that they apply to actual situations only and not to potential situations identified as a result of analysis; yet, other criteria address "could have." When do the results of analysis have to be reported?

Answer: The results need only to be reported if the applicable criterion requires the reporting of conditions that "could have" caused a problem. However, others have a need to know about potential problems that are not reportable; thus, such items may be reported as a voluntary LER.

(20) System Interactions

Question: Utilities are not required to analyze for system interactions, yet the rule requires the reporting of events that "could have" happened but did not. Are we to initiate a design activity to determine "could have" system interactions?

Answer: No. Report system interactions that you find as a result of ongoing routine activities (e.g., the analysis of operating events).

### 3.2.8 Common-cause Failures of Independent Trains or Channels

<p><b>10 CFR 50.72</b></p> <p>There is no corresponding requirement in 10 CFR 50.72.</p>	<p><b>§50.73(a)(2)(vii)</b></p> <p>"Any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to:</p> <p>(A) Shut down the reactor and maintain it in a safe shutdown condition;</p> <p>(B) Remove residual heat;</p> <p>(C) Control the release of radioactive material; or</p> <p>(D) Mitigate the consequences of an accident."</p>
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An LER is required for a common cause inoperability of independent trains or channels.

#### Discussion

This criterion requires those events to be reported where a single cause or condition caused independent trains or channels to become inoperable. Common-causes may include such factors as high ambient temperatures, heat up from energization, inadequate preventive maintenance, oil contamination of air systems, incorrect lubrication, use of non-qualified components or manufacturing or design flaws. The event is reportable if the independent trains or channels were inoperable at the same time, regardless of whether or not they were discovered at the same time. (Example (2) below illustrates a case where the second failure was discovered 3 days later than the first.)

An event or failure that results in or involves the failure of independent portions of more than one train or channel in the same or different systems is reportable. For example, if a cause or condition caused components in Train "A" and "B" of a single system to become inoperable, even if additional trains (e.g., Train "C") were still available, the event must be reported. In addition, if the cause or condition caused components in Train "A" of one system and in Train "B" of another system (i.e., train that is assumed in the safety analysis to be independent) to become inoperable, the event must be reported. However, if a cause or condition caused components in Train "A" of one system and Train "A" of another system (i.e., trains that are not assumed in the safety analysis to be independent), the event need not be reported unless it meets one or more of the other reporting criteria.

Trains or channels for reportability purposes are defined as those redundant, independent trains or channels designed to provide protection against single failures. Many engineered safety systems containing active components are designed with at least a two-train system. Each independent train in a two-train system can normally satisfy all the safety system requirements to safely shut down the plant or satisfy those criteria that have to be met following an accident.

This criterion does not include those cases where one train of a system or a component was

removed from service as part of a planned evolution, in accordance with an approved procedure, and in accordance with the plant's technical specifications. For example, if the licensee removes part of a system from service to perform maintenance, and the Technical Specifications permit the resulting configuration, and the system or component is returned to service within the time limit specified in the Technical Specifications, the action need not be reported under this paragraph. However, if, while the train or component is out of service, the licensee identifies a condition that could have prevented the whole system from performing its intended function (e.g., the licensee finds a set of relays that is wired incorrectly), that condition must be reported.

Analysis of events reported under this part of the rule may identify previously unrecognized common-cause (or dependent) failures and system interactions. Such failures can be simultaneous failures that occur because of a single initiating cause (i.e., the single cause or mechanism serves as a common input to the failures); or the failures can be sequential (i.e., cascading failures), such as the case where a single component failure results in the failure of one or more additional components.

### **Examples**

(1) Incorrect Lubrication Degrades Main Steam Isolation Valve Operation

During monthly operability tests, the licensee found that the Unit 2B inboard MSIV did not stroke properly as a result of a solenoid-operated valve (SOV) failure. Both units were shut down from 100-percent power, and the SOVs piloting all 16 MSIVs were inspected. The licensee found that the SOVs on all 16 MSIVs were damaged. The three-way and four-way valves and solenoid pilot valves on all 16 MSIVs had a hardened, sticky substance in their ports and on their O-rings. As a result, motion of all the SOVs was impaired, resulting in instrument air leakage and the inability to operate all of the MSIVs satisfactorily. The licensee also examined unused spares in the warehouse and found that the lubricant had dried out in those valves, leaving a residue. Several of the warehouse spares were bench tested. They were found to be degraded and also leaked. The root cause of the event was use of an incorrect lubricant.

The event is reportable (a) because a single cause or condition caused multiple independent trains of the main steam isolation system (a system designed to control the release of radioactive material and mitigate the consequences of an accident) to become inoperable [§50.73(a)(2)(vii)(C and D)] and (b) because a single condition could have prevented fulfillment of a safety function [§50.73(a)(2)(v)].

(2) Marine Growth Causing Emergency Service Water To Become Inoperable (Common-Mode Failure Mechanism)

With Unit 1 at 74 percent power and Unit 2 at 100 percent power, ESW pump 1A was declared inoperable because its flow rate was too low to meet acceptance criteria. Three days later, with both units at the same conditions, ESW pump 1C was declared inoperable for the same reason. The ESW pumps provide the source of water from the intake canal during a design-basis accident. In both cases, the cause was marine growth of hydroids and barnacles on the impeller and suction of the pumps. Following maintenance, both

pumps passed their performance tests and were placed in service. Pump testing frequency was increased to more closely monitor pump performance.

This event is reportable because a single cause or condition caused two independent trains to become inoperable in a single system designed to mitigate the consequences of an accident [§50.73(a)(2)(vii)(D)].

(3) Testing Indicated Several Inoperable Snubbers

The licensee found 11 inoperable snubbers during periodic testing. All the snubbers failed to lock up in tension and/or compression. These failures did not render their respective systems inoperable, but rendered trains inoperable. Improper lockup settings and/or excessive seal bypass caused these snubbers to malfunction. These snubbers were designed for low probability seismic events. Numerous previous similar events have been reported by this licensee.

This condition is reportable because the condition indicated a generic common-mode problem that caused numerous multiple independent trains in one or more safety systems to become inoperable. The potential existed for numerous snubbers in several systems to fail following a seismic event rendering several trains inoperable. [§ 50.73(a)(2)(vii)]

(4) Stuck High-Pressure Injection (HPI) System Check Valves as a Result of Corroded Flappers

The licensee reported that check valves in three of four HPI lines were stuck closed. The unit had been shut down for refueling and maintenance.

A special test of the check valves revealed that three 2½-inch stop check valves remained closed when 130 pounds per square inch (psi) of differential pressure was applied to the valve. An additional test revealed that the valve failed to open when 400 psi of differential pressure (the capacity of the pump) was applied to the valve. Further review showed that the common cause of valve failure was the flappers corroding shut.

The event is reportable because a single cause or condition caused at least two independent trains of the HPI system to become inoperable. This system is designed to remove residual heat and mitigate the consequences of an accident. The condition is therefore reportable under 50.73(a)(2)(vii)(B and D), common cause failure in systems designed to remove residual heat and mitigate accidents.

### 3.2.9 Airborne or Liquid Effluent Release

<p><b>§50.72</b></p> <p><del>Release of radioactive materials should be evaluated for declaration of an emergency class. Declaration of an emergency class is reportable under §50.72(a)(1)(i).</del></p>	<p><b>§50.73(a)(2)(viii)</b></p> <p>"(A) Any airborne radioactivity release that, when averaged over a time period of 1 hour, resulted in <u>airborne radionuclide concentrations</u> in an unrestricted area that <u>exceeded</u> 20 times the applicable concentration limits specified in Appendix B to Part 20, Table 2, Column 1.</p> <p>(B) Any liquid effluent release that, when averaged over a time period of 1 hour, exceeds 20 times the applicable concentrations specified in Appendix B to Part 20, Table 2, Column 2, at the point of entry into the receiving waters (i.e., unrestricted area) for all radionuclides except tritium and dissolved noble gases.</p> <p style="text-align: center;"><del>§50.73(a)(2)(ix)</del></p> <p><del>Reports submitted to the Commission in accordance with paragraph (a)(2)(viii) of this section also meet the effluent release reporting requirements of §20.2203(a)(3) of this chapter.</del></p>
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An LER is required for a release as defined in the rules.

#### Discussion

Although similar to 10 CFR 20.2202 and 20.2203, these criteria place a lower threshold for reporting events at commercial power reactors because the significance of the breakdown of the licensee's program that allowed such a release is the primary concern, rather than the significance of the effect of the actual release. In contrast, however, the time limit for reporting under 10 CFR 20.2202 and 20.2203 is more restrictive.

For a release that takes less than 1 hour, normalize the release to 1 hour (e.g., if the release lasted 15 minutes, divide by 4). For releases that lasted more than 1 hour, use the highest release for any continuous 60-minute period (i.e., comparable to a moving average).

Annual average meteorological data should be used for determining offsite airborne concentrations of radioactivity to maintain consistency with the technical specifications (TS) for reportability thresholds.

The location used as the point of release for calculation purposes should be determined using the expanded definition of an unrestricted area as specified in NUREG-0133 ("Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978) to

maintain consistency with the TS.

If estimates determine that the release has exceeded the reporting criterion, an ENS notification is required, followed up by a more precise estimate in the LER. If it is later determined that the release was less than this criterion, the ENS notification may be retracted.

As indicated in Generic Letter 85-19, September 27, 1985, "Reporting Requirements on Primary Coolant Iodine Spikes," primary coolant iodine spike releases need not be reported on a short term basis.

### **Examples**

#### **(1) Unmonitored Release of Contaminated Steam Through Auxiliary Boiler Atmospheric Vent**

An unmonitored release of contaminated steam resulted from a combination of a tube leak, improper venting of an auxiliary boiler system, and inadequate procedures. This combination resulted in a release path from a liquid waste concentrator to the atmosphere via the auxiliary boiler system steam drum vent.

Because of rain at the site, the steam release to the atmosphere was condensed and deposited onto plant buildings and yard areas. This contamination was washed via a storm drain into a lake. The release was later confirmed to be  $2.6 \text{ E-5 } \mu\text{Ci/ml}$  of Cs-137 at the point of entry into the receiving water.

An LER is required as a liquid radioactive material release because the unmonitored release exceeded 20 times the applicable concentrations specified in Table 2, Column 2 of Appendix B to 10 CFR Part 20, averaged over 1 hour at the site boundary.

#### **(2) Unplanned Gaseous Release**

During routine scheduled maintenance on a pressure actuated valve in the gaseous waste system, an unplanned radioactive release to the environment was detected by a main stack high radiation alarm. The release occurred when an isolation valve, required to be closed on the station tag out sheet, was inadvertently left open. This allowed radioactive gas from the waste gas decay tank to escape through a pressure gage connection that had been opened to vent the system. Operator error was the root cause of this release, with ambiguous valve tag numbers as a contributing factor. The concentration in the unrestricted area, averaged over 1 hour, was estimated by the licensee to be  $1 \text{ E-5 } \mu\text{Ci/ml}$  of Kr-85 and  $5 \text{ E-6 } \mu\text{Ci/ml}$  of Xe-133.

The event was reportable via an LER because the sum of the ratios of the concentration of each airborne radionuclide in the restricted area when averaged over a period of 1 hour, to its respective concentration specified in Table 2, Column 1 of Appendix B to 10 CFR 20, exceeds 20.

### 3.2.10 Internal Threat or Hampering

§50.72	§50.73(a)(2)(x)
<p><u>Events that involve an actual threat or significant hampering should be evaluated for declaration of an emergency class. Declaration of an emergency class is reportable under §50.72(a)(1)(i).</u></p>	<p>"Any event that posed an actual threat to the safety of the nuclear power plant or significantly hampered site personnel in the performance of duties necessary for the safe operation of the nuclear power plant including fires, toxic gas releases, or radioactive releases."</p>

An LER is required for an event that poses an actual threat or causes significant hampering, as defined in the rules.

#### Discussion

These criteria pertain to internal threats. The criteria for external threats, §50.72(b)(2)(iii) and §50.73(a)(2)(iii), are described in Section 3.2.5 of this report.

This provision requires reporting events, particularly those caused by acts of personnel, which endanger the safety of the plant or interfere with personnel in the performance of duties necessary for safe plant operations.

The licensee must exercise some judgment in reporting under this rule. For example, a small fire on site that did not endanger any plant equipment and did not and could not reasonably be expected to endanger the plant is not reportable.

The phrase "significantly hampers site personnel" applies narrowly, i.e. only to those events which significantly hamper the ability of site personnel to perform safety-related activities affecting plant safety.

In addition, the staff considers the following standards appropriate in this regard:

- The significant hampering criterion is pertinent to "the performance of duties necessary for safe operation of the nuclear power plant." One way to evaluate this is to ask if one could seal the room in question (or disable the function in question) for a substantial period of time and still operate the plant safely. For example, if a switchgear room is unavailable for a time, but it is normally not necessary to enter the room for safe operation, and no need to enter the room arises while it is unavailable, the event is not reportable under this criterion.
- Significant hampering includes hindering or interfering ~~(such as with protective clothing or radiation work permits)~~ provided that the interference or delay is sufficient to significantly threaten the safe operation of the plant.
- Actions such as room evacuations that are precautionary would not constitute significant

hampering if the necessary actions can still be performed in a timely manner.

Plant mode may be considered in determining if there is an actual internal threat to a plant. However, licensees should not incorrectly assume that everything that happens while a plant is shut down is unimportant and not reportable.

In-plant releases must be reported if they require evacuation of rooms or buildings and, as a result, the ability of the operators to perform duties necessary for safe operation of the plant is significantly hampered.

Events such as minor spills, small gaseous waste releases, or the disturbance of contaminated particulate matter (e.g., dust) that require temporary evacuation of an individual room until the airborne concentrations decrease or until respiratory protection devices are used, are not reportable unless the ability of site personnel to perform necessary safety functions is significantly hampered.

No LER is required for precautionary evacuations of rooms and buildings that subsequent evaluation determines were not required. Even if an evacuation affects a major part of the facility, the test for reportability is whether an actual threat to plant safety occurred or whether site personnel were significantly hampered in carrying out their safety responsibilities.

In most cases, fires result in ENS notification because there is a declaration of an emergency class, which is reportable under §50.72(a)(1)(ii) as discussed in Section 3.1.1 of this report.<sup>(16)</sup> If there is an actual threat or significant hampering, an LER is also required. With regard to control room fires, the staff generally considers a control room fire to constitute an actual threat and significant hampering.<sup>(17)</sup>

### Examples

#### (1) Fire in Refueling Bridge

Question: If we have a fire in the refueling bridge and we are not moving fuel, would the fire be reportable?

Answer: No. If the plant is not moving fuel and the fire does not otherwise threaten other safety equipment and does not hamper site personnel, the fire is not reportable. If the plant is moving fuel, the fire is reportable.

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<sup>(16)</sup> As indicated in NUREG-0654, Rev. 1, Information Notice 88-64 and Regulatory Guide 1.101, Rev. 3 (which endorses NUMARC/NESP-007, Rev. 2), a fire that lasts longer than 10 or 15 minutes or which affects plant equipment important for safe operation would result in declaration of an emergency class.

<sup>(17)</sup> It is theoretically possible to have a control room fire which is discovered and extinguished quickly and, even in this location, does not significantly hamper the operators and does not threaten plant safety. Examples could include small paper fires in ash trays or trash cans, or cigarette burns of furniture or upholstery.

(2) Fire in Reactor Building

Question: If we have a fire in the reactor building that forces contractor personnel who are doing a safety related modification to leave, but the fire did not hamper operations personnel or equipment, would that fire be reportable?

Answer: No. The fire would not be reportable if the fire was not severe enough that it posed an actual threat to the plant and the delay in completing the modification did not significantly threaten the safe operation of the plant.

### 3.2.11 Contaminated Person Transported Offsite

<b>§50.72(b)(3)(xii)</b>  "Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment."	<b>10 CFR 50.73</b>  There is no corresponding requirement in 10 CFR 50.73.
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If not reported under §50.72(a), (b)(1), or (b2), an ENS notification is required under (b3) for transport of a radioactively contaminated person to an offsite medical facility for treatment.

#### Discussion

The phrase "radioactively contaminated" refers to either radioactively contaminated clothing and/or person. If there is a potential for contamination (e.g., an initial onsite survey for radioactive contamination is required but has not been completed before transport of the person off site for medical treatment) the licensee should make an ENS notification. See the example.

No LER is required for transporting a radioactively contaminated person to an offsite medical facility for treatment.

#### Example

##### Radioactively Contaminated Person Transported Offsite for Medical Treatment

A contract worker experienced a back injury lifting a tool while working in a contaminated area and was considered potentially contaminated because his back could not be surveyed. Health physics (HP) technicians accompanied the worker to the hospital. The licensee made an ENS notification immediately and an update notification after clothing, but not the individual, was found to be contaminated. The HP technicians returned to the plant with the contaminated protective clothing worn by the worker.

An ENS notification is required because of the transport of a radioactively contaminated person to an offsite medical facility for treatment.

### 3.2.12 News Release or Notification of Other Government Agency

<b>§50.72(b)(1)(xi)</b>	<b>10 CFR 50.73</b>
<p><u>"Issuance of a news release or notification of other government agencies with respect to any event or situation related to the health and safety of the public or onsite personnel or protection of the environment. Such an event may include an onsite fatality or inadvertent release of radioactively contaminated materials.</u></p> <p><del>"Any event or situation, related to the health and safety of the public or on-site personnel, or protection of the environment, for which a news release is planned or notification to other government agencies has been or will be made. Such an event may include an on-site fatality or inadvertent release of radioactively contaminated materials."</del></p>	There is no corresponding requirement in 10 CFR 50.73.

If not reported under §50.72(a) or (b)(1), licensees are required to notify the NRC via the ENS.

#### Discussion

The purpose of this criterion is to ensure the NRC is made aware of issues that will cause heightened public or government concern related to the radiological health and safety of the public or on-site personnel or protection of the environment.

Licensees typically issue press releases or notify local, county, State or Federal agencies on a wide range of topics that are of interest to the general public. The NRC Operations Center does not need to be made aware of every press release made by a licensee. The following clarifications are intended to set a reporting threshold that ensures necessary reporting, while minimizing unnecessary reporting.

Examples of events likely to be reportable under this criterion include

- release of radioactively contaminated tools or equipment to public areas
- unusual or abnormal releases of radioactive effluents
- onsite fatality

Licensees generally do not have to report media and government interactions unless they are related to the radiological health and safety of the public or onsite personnel, or protection of the environment. For example, the NRC does not generally need to be informed under this criterion of:

- minor deviations from sewage or chlorine effluent limits
- minor non-radioactive, onsite chemical spills
- minor oil spills

- problems with plant stack or water tower aviation lighting
- peaceful demonstrations
- routine reports of effluent releases to other agencies
- releases of water from dams associated with the plant

### Press Release

The NRC has an obligation to inform the public about issues within the NRC's purview that affect or raise a concern about the public health and safety. Thus, the NRC needs accurate, detailed information in a timely manner regarding such situations. The NRC should be aware of information that is available for the press or other government agencies.

However, the NRC need not be notified of every press release a licensee issues. The field of NRC interest is narrowed by the phrase "related to the health and safety of the public or onsite personnel, or protection of the environment," in order to exclude administrative matters or those events of no safety significance.

Routine radiation releases are not specifically reportable under this criterion. However, if a release receives media attention, the release is reportable under this criterion.

If possible, licensees should make an ENS notification before issuing a press release because news media representatives will usually contact the NRC public affairs officer shortly after its issuance for verification, explanation, or interpretation of the facts.

### Other Government Notifications

For reporting purposes, "other government agencies" refers to local, State or other Federal agencies.

Notifying another Federal agency does not relieve the licensee of the requirement to report to the NRC.

For those plants which provide a State incident response facility with alarm indication coincident with control room alarms, e.g., an effluent radiation monitor alarm, but the actual radiation release is less than the criteria in §50.72(b)(2)(viii), the NRC does not consider these alarm indications as a notification to the State by the licensee. An alarm received at a State facility is in itself not a requirement for notifying the NRC. In so far as this reporting criterion is concerned, the licensee need only notify the NRC when the licensee determines that a reportable release has occurred, or believes a real potential exists for interest on the part of the State, the media, or the public, or a press release is being planned.

## **Examples**

### (1) Onsite Drowning Government Notifications and Press Release

A boy fell into the discharge canal while fishing and failed to resurface. The licensee notified the local sheriff, State Police, U.S. Coast Guard and State emergency agencies. Local news agencies were granted onsite access for coverage of the event. The licensee

notified the NRC resident inspector.

As ENS notification is needed because of the fatality on-site, the other government notifications made, and media involvement.

(2) Licensee Media Inquiries Regarding NRC Findings

As a result of a local newspaper article regarding the findings of an NRC regional inspection of the 10 CFR Part 50, Appendix R, Fire Protection Program, a licensee representative was interviewed on local television and radio stations. The licensee notified State officials and the NRC resident inspector.

The staff does not consider an ENS notification to be needed because the subject of the radio and TV interviews was an NRC inspection.

(3) County Government Notification

The licensee informed county governments and other organizations of a spurious actuation of several emergency response sirens in a county (for about 5 minutes according to county residents). The licensee also planned to issue a press release.

An ENS notification is needed because county agencies were notified regarding the inadvertent actuation of part of the public notification system. Such an event also would be reportable if the county informs the licensee of the problem because of the concern of the public for their radiological health and safety.

(4) State Notification of Unscheduled Radiation Release

The licensee reported to the State that they were going to release about 50 curies of gaseous radioactivity to the atmosphere while filling and venting the pressurizer. The licensee then revised their estimate of the release to 153 curies. However, since the licensee had not informed the State within 24 hours of making the release, they had to reclassify the release as "unscheduled" per their agreement with the State. The licensee notified the State and the NRC resident inspector.

An ENS notification is needed because of the State notification of an "unscheduled" release of gaseous radioactivity. The initial notification to the State of the scheduled release does not need an ENS notification because it is considered as a routine notification.

(5) State Notification of Improper Dumping of Radioactive Waste

The licensee transported two secondary side filters to the city dump as nonradioactive waste but later determined they were radioactive. The dump site was closed and the filters retrieved. The licensee notified the appropriate State agency and the NRC resident inspector.

An ENS notification is needed because of the notification to the State agency of the inadvertent release of radioactively contaminated material off site, which affects the radiological health and safety of the public and environment.

(6) Reports Regarding Endangered Species

The licensee notified the U.S. Fish & Wildlife Service and a State agency that an endangered species of sea turtle was found in their circulating water structure trash bar. No press release was issued.

An ENS notification is required because of the notification of state and federal agencies regarding the taking of an endangered species. (The NRC has statutory responsibilities regarding protection of endangered species.)

(7) Routine Agency Notifications

A licensee notified the U.S. Environmental Protection Agency (EPA) that the circulation water temperature rise exceeded the release permit allowable. This event was caused by the unexpected loss of a circulating water pump while operating at 92-percent power. The licensee reduced power to 73 percent so that the circulating water temperature would decrease to within the allowable limits until the pump could be repaired.

A licensee notified the Federal Aviation Agency that it removed part of its auxiliary boiler stack aviation lighting from service to replace a faulty relay.

A licensee notified the State, EPA, U.S. Coast Guard and Department of Transportation that 5 gallons of diesel fuel oil had spilled onto gravel-covered ground inside the protected area. The spill was cleaned up by removing the gravel and dirt.

The staff does not consider an ENS notification to be needed because these events are routine and have little significance.

### 3.2.13 Loss of Emergency Preparedness Capabilities

<b>§50.72(b)(3)(xiii)</b>	<b>10 CFR 50.73</b>
"Any event that results in a major loss of emergency assessment capability, offsite response capability, or <u>offsite</u> communications capability (e.g., significant portion of control room indication, <u>e</u> mergency <u>n</u> otification system, or offsite notification system)."	There is no corresponding requirement in 10 CFR 50.73.

If not reported under §50.72(a), (b)(1) or (b)(2), an ENS notification is required under (b)(3) for a major loss of their emergency assessment, offsite response, or communications capability.

#### Discussion

This reporting requirement pertains to events that would impair a licensee's ability to deal with an accident or emergency. Notifying the NRC of these events may permit the NRC to take some compensating measures and to more completely assess the consequences of such a loss should it occur during an accident or emergency.

Examples of events that this criterion is intended to cover are those in which any of the following is not available:

- Safety parameter display system (SPDS)
- Emergency response facilities (ERFs)
- Emergency communications facilities and equipment including the emergency notification system (ENS)
- Public prompt notification system including sirens
- Plant monitors necessary for accident assessment

These and other situations should be evaluated for reportability as discussed below.

#### Loss of Emergency Assessment Capability

A major loss of emergency assessment capability would include those events that significantly impair the licensee's safety assessment capability. Some engineering judgment is needed to determine the significance of the loss of particular equipment, e.g., loss of only the SPDS for a short period of time need not be reported, but loss of SPDS and other assessment equipment at the same time may be reportable.

The staff considers the loss of a significant portion of control room indication including annunciators or monitors, or the loss of all plant vent stack radiation monitors, as examples of a

major loss of emergency assessment capability which should be evaluated for reportability.

#### Loss of Offsite Response Capability

A major loss of offsite response capability includes those events that would significantly impair the fulfillment of the licensee's approved emergency plan for other than a short time. Loss of offsite response capability may typically include the loss of plant access, emergency offsite response facilities<sup>(18)</sup>, or public prompt notification system, including sirens and other alerting systems.

If a significant natural hazard (e.g., earthquake, hurricane, tornado, flood, etc.) or other event causes evacuation routes to be impassible or other parts of the response infrastructure to be impaired to the extent that the State and local governments are rendered incapable of fulfilling their responsibilities in the emergency plan for the plant, then the NRC must be notified. This does not apply in the case of routine traffic impediments such as fog, snow and ice which do not render the state and local governments incapable of fulfilling their responsibilities. It is intended to apply to more significant cases such as the conditions around the Turkey Point plant after Hurricane Andrew struck in 1992 or the conditions around the Cooper station during the Midwest floods of 1993.

If the alert systems, e.g., sirens, are owned and/or maintained by others, the licensee should take reasonable measures to remain informed and must notify the NRC if a large number of sirens fail. Although the loss of a single siren for a short time is not a major loss of offsite response capability, the loss of a large number of sirens, other alerting systems (e.g., tone alert radios), or more importantly, the lost capability to alert a large segment of the population for 1 hour would warrant an immediate notification.

#### Loss of Communications Capability

A major loss of communications capability may include the loss of ENS and/or other offsite communication systems. The other offsite communication systems may include a dedicated telephone communication link to a State or a local government agency and emergency offsite response facilities, in-plant paging and radio systems required for safe plant operation, or commercial telephone lines.

Should either or both of the emergency communications subsystems (ENS and HPN) fail, the NRC Operations Center should be so informed over normal commercial telephone lines. When notifying the NRC Operations Center, licensees should use the backup commercial telephone numbers provided. This satisfies the guidance provided in previous Information Notices 85-44 "Emergency Communication System Monthly Test," dated May 30, 1985 and 86-97 "Emergency Communications System," dated November 28, 1986, to test the backup means of communication when the primary system is unavailable as well as the reporting requirements of §50.72(b)(2)(xii). If the Operations Center notifies the licensee that an ENS line is inoperable, there is no need for a subsequent licensee notification. Loss of either ENS or HPN does not generate an event report. The Operations Center contacts the appropriate repair organization.

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<sup>(18)</sup> Performing maintenance on an offsite emergency response facility is not reportable if the facility can be returned to service promptly in the event of an accident.

In a similar manner, if the NRC supplied telephone line or modem used for the emergency response data system is inoperable, the NRC operations center should be informed so that repairs can be ordered. However, this does not generate an event report.

### Examples

#### (1) Loss of Public Prompt Notification System

ENS notifications of the loss of the emergency sirens or tone alert radios vary according to the licensee's locale and interpretations of "major loss" and have included:

- 12 of 40 county alert sirens disabled because of loss of power as a result of severe weather.
- 28 of 54 alert sirens were reported out of service as a result of a local ice storm.
- All offsite emergency sirens were:
  - found inoperable during a monthly test.
  - taken out of service for repair.
  - inoperable because control panel power was lost.
  - inoperable because the county radio transmitter failed.

An ENS notification is required because of the major loss of offsite response capability, i.e., the public prompt notification system. However, licensees may use engineering judgment in determining reportability (i.e., a "major loss") based upon such factors as the percent of the population not covered by emergency sirens and the existence of procedures or practices to compensate for the lost emergency sirens. An LER is not required because there are no corresponding 10 CFR 50.73 requirements.

#### (2) Loss of ENS and Commercial Telephone System

The licensee determined that ENS and commercial telecommunications capability was lost to the control room when a fiber optic cable was severed during maintenance. A communications link was established and maintained between the site and the load dispatcher via microwave transmission. Both the ENS and commercial communications capability were restored approximately 90 minutes later.

An ENS notification is required because of the major loss of communications capability. Although the microwave link to the site was established and maintained during the telephone outage, this in itself does not fully compensate for the loss of communication that would be required in the event of an emergency at the plant. No LER is required because there are no corresponding 10 CFR 50.73 requirements.

#### (3) Loss of Direct Communication Line to Police

The licensee contacted the State Police via commercial telephone lines and reported to the NRC Operations Center that the direct telephone line to the State Police was inoperable for

over 1 hour. The licensee notified the NRC Operations Center in a followup ENS call that the line was restored to operability.

An ENS notification would be required if the loss of the direct telephone line(s) to various police, local, or State emergency or regulatory agencies is not compensated for by other readily available offsite communications systems. In this example, no ENS notification is required since commercial telephone lines to the State Police were available. No LER is required because there are no corresponding 10 CFR 50.73 requirements.

### 3.3 Followup Notification

This section addresses §50.72(c), "Followup Notification." These notifications are in addition to making the required initial telephone notifications under §50.72(a) or (b). Reporting under this paragraph is intended to provide the NRC with timely notification when an event becomes more serious or additional information or new analysis clarify an event. The paragraph also authorizes the NRC to maintain a continuous communications channel for acquiring necessary followup information.

§50.72(c)	10 CFR 50.73
<p><i>"Followup Notification.</i> With respect to the telephone notifications made under paragraphs (a) and (b) of this section, in addition to making the required initial notification, each licensee shall, during the course of the event:</p> <p>(1) <i>Immediately report</i></p> <p>(i) any further degradation in the level of safety of the plant or other worsening plant conditions, including those that require the declaration of any of the Emergency Classes, if such a declaration has not been previously made, or</p> <p>(ii) any change from one Emergency Class to another, or</p> <p>(iii) a termination of the Emergency Class.</p> <p>(2) <i>Immediately report</i></p> <p>(i) the results of ensuing evaluations or assessments of plant conditions,</p> <p>(ii) the effectiveness of response or protective measures taken, and</p> <p>(iii) information related to plant behavior that is not understood.</p> <p>(3) Maintain an open, continuous communication channel with the NRC Operations Center upon request by the NRC."</p>	<p>There is no corresponding requirement in 10 CFR 50.73.</p>

#### Discussion

These criteria are intended to provide the NRC with timely notification when an event becomes more serious or additional information or new analyses clarify an event. They also permit the NRC to maintain a continuous communications channel because of the need for continuing followup information or because of telecommunications problems.

With regard to the open, continuous communications channel, licensees have a responsibility to provide enough on-shift personnel, knowledgeable about plant operations and emergency plan implementation, to enable timely, accurate, and reliable reporting of operating events without

interfering with plant operation as discussed in the Statement of Considerations for the rule and Information Notice 85-80, "Timely Declaration of an Emergency Class, Implementation of an Emergency Plan, and Emergency Notifications."

## 4 EMERGENCY NOTIFICATION SYSTEM REPORTING

This section describes the ENS referenced in 10 CFR 50.72 and provides general and specific guidelines for ENS reporting.

### 4.1 Emergency Notification System

The NRC Operations Center is the nucleus of the ENS and has the capability to handle emergency communication needs. The NRC's response to both emergencies and non-emergencies is coordinated in this communication center. The key NRC emergency communications personnel, the emergency officer (EO), regional duty officer (RDO), and the headquarters operations officer (HOO), are trained to notify appropriate NRC personnel and to focus appropriate NRC management attention on any significant event.

#### (1) ENS Telephones

Each commercial nuclear power reactor facility has ENS telephones. These telephones are located in each licensee's control room, technical support center (TSC), and emergency operations facility (EOF). A separate ENS line is installed at EOF's which are not onsite. The ENS is part of the Federal Telecommunications System (FTS). This FTS ENS replaces the dedicated ENS ring down telephones used previously to provide a reliable communications pathway for event reporting.

#### (2) Health Physics Network Telephones

The health physics network (HPN) is designed to provide health physics and environmental information to the NRC Operations Center in the event of an ongoing emergency.

These telephones are installed in each licensee's TSC and EOF and, like the ENS, they are now part of the FTS.

#### (3) Tape Recording

The NRC tape-records all conversations with the NRC Operations Center. The tape is saved for a month in case there is a public or private inquiry.

#### (4) Facsimile Transmission (Fax)

Licensees occasionally fax an event notification into the NRC Operations Center on a commercial telephone line in conjunction with making an ENS notification. However, §50.72 requires that licensees notify the NRC Operations Center via the ENS; therefore, licensees also must make an ENS notification.

## **4.2 General ENS Notification**

### **4.2.1 Timeliness**

The required timing for ENS reporting is spelled out in §§50.72(a)(3), (b)(1), (b)(2), (b)(3), (c)(1), (c)(2), as "immediate" and "as soon as practical and in all cases within one (or four or eight) hour(s)" of the occurrence of an event (depending on its significance and the need for prompt NRC action). The intent is to require licensees to make and act on reportability decisions in a timely manner so that ENS notifications are made to the NRC as soon as practical, keeping in mind the safety of the plant. See Section 2.11 for further discussion of reporting timeliness.

### **4.2.2 Voluntary Notifications**

Licensees may make voluntary or courtesy ENS notifications about events or conditions in which the NRC may be interested. The NRC responds to any voluntary notification of an event or condition as its safety significance warrants, regardless of the licensee's classification of the reporting requirement. If it is determined later that the event is reportable, the licensee can change the ENS notification to a required notification under the appropriate 10 CFR 50.72 reporting criterion.

### **4.2.3 ENS Notification Retraction**

If a licensee makes a 10 CFR 50.72 ENS notification and later determines that the event or condition was not reportable, the licensee should call the NRC Operations Center on the ENS telephone to retract the notification and explain the rationale for that decision. There is no set time limit for ENS telephone retractions. However, since most retractions occur following completion of engineering and/or management review, it is expected that retractions would occur shortly after such review. A retracted ENS report is retained in the ENS data base, along with the retraction. See section 2.8 for further discussion of retractions.

### **4.2.4 ENS Event Notification Worksheet (NRC Form 361)**

The ENS Event Notification Worksheet (NRC Form 361) provides the usual order of questions and discussion for easier communication and its use often enables a licensee to prepare answers for a more clear and complete notification. A clear ENS notification helps the HOO to understand the safety significance of the event. Licensees may obtain an event number and notification time from the HOO when the ENS notification is made. If an LER is required, the licensee may include this information in the LER to provide a cross reference to the ENS notification, making the event easier to trace.

Licensees should use proper names for systems and components, as well as their alphanumeric identifications during ENS notifications. Licensees should avoid using local jargon for plant components, areas, operations, and the like so that the HOO can quickly understand the situation and have fewer questions. In addition, others not familiar with the plant can more readily understand the situation.

### 4.3 Typical ENS Reporting Issues

At the time of an ENS notification, the NRC must independently assess the status of the reactor to determine if it is in a safe condition and expected to remain so. The HOO needs to understand the safety significance of each event to brief NRC management or initiate an NRC response. The HOO will be primarily concerned about the safety significance of the event, the current condition of the plant, and the possible near-term effects the event could have on plant safety. The HOO will attempt to obtain as complete a description as is available at the time of the notification of the event or condition, its causes, and its effects. Depending upon the licensee's description of the event, the HOO may be concerned about other related issues. The questions that the licensees typically may be asked to discuss do not represent a requirement for reporting. These questions are of a nature to allow the HOO information to more fully understand the event and its safety significance and are not meant in any way to distract the licensee from more important issues.

The licensee's first responsibility during a transient is to stabilize the plant and keep it safe. However, licensees should not delay declaring an emergency class when conditions warrant because delaying the declaration can defeat the appropriate response to an emergency. Because of the safety significance of a declared emergency, time is of the essence. The NRC needs to become aware of the situation as soon as practical to activate the NRC Operations Center and the appropriate NRC regional incident response center, as necessary, and to notify other Federal agencies.

The effectiveness of the NRC response during an event depends largely on complete and accurate reporting from the licensee. During an emergency, the appropriate regional incident response center and the NRC Operations Center become focal points for NRC action. Licensee actions during an emergency are monitored by the NRC to ensure that appropriate action is being taken to protect the health and safety of the public. When required, the NRC supports the licensee with technical analysis and coordinates logistics support. The NRC keeps other Federal agencies informed of the status of an incident and provides information to the media. In addition, the NRC assesses and, if necessary, confirms the appropriateness of actions recommended by the licensee to local and State authorities.

Information Notice 85-80, "Timely Declaration of an Emergency Class, Implementation of an Emergency Plan, and Emergency Notification," dated October 15, 1985, indicates that it is the licensee's responsibility to ensure that adequate personnel, knowledge about plant conditions and emergency plan implementing procedures, are available on shift to assist the shift supervisor to classify an emergency and activate the emergency plan, including making appropriate notifications, without interfering with plant operation. When 10 CFR 50.72 was published, the NRC made clear its intent in the Statements of Consideration that notifications on the ENS to the NRC Operations Center should be made by those knowledgeable of the event. If the description of any emergency is to be sufficiently accurate and timely to meet the intent of the NRC's regulations, the personnel responsible for notification must be properly trained and sufficiently knowledgeable of the event to report it correctly. The NRC did not intend that notifications made pursuant to 10 CFR 50.72 would be made by those who did not understand the event that they are reporting.

ENS reportability evaluations should be concluded and the ENS notification made as soon as

practical and in all cases within 1, 4 or 8 hours to meet 10 CFR 50.72. The Statement of Considerations noted that the 1-hour deadline is necessary if the NRC is to fulfill its responsibilities during and following the most serious events occurring at operating nuclear power plants without interfering with the operator's ability to deal with an accident or transient in the first few critical minutes (48 FR 39041, August 29, 1983).

## 5 LICENSEE EVENT REPORTS

This section discusses the guidelines for preparing and submitting LERs. Section 5.1 addresses administrative requirements and provides guidelines for submittal; Section 5.2 addresses the requirements and guidelines for the LER content. Portions of the rule are quoted, followed by explanation, if necessary. A copy of the required LER form (NRC Form 366), LER Text Continuation form (NRC Form 366A), and LER Failure Continuation form (NRC Form 366B), are shown at the end of this section.

### 5.1 LER Reporting Guidelines

This section addresses administrative requirements and provides guidelines for submittal. Topics addressed include submission of reports, forwarding letters, cancellation of LERs, report legibility, reporting exemptions, reports other than LERs that use LER forms, supplemental information, revised reports, and general instructions for completing LER forms.

#### 5.1.1 Submission of LERs

##### §50.73(d)

"Licensee Event Reports must be prepared on Form NRC 366 and submitted ~~within 30 days of discovery of a reportable event or situation~~ to the U.S. Nuclear Regulatory Commission, as specified in ~~§50~~Sec. 50.4."

An LER is to be submitted (mailed) within ~~30-60~~ 60 days of the discovery date. If a ~~30-60~~ 60-day period ends on a Saturday, Sunday, or holiday, reports submitted on the first working day following the end of the ~~30-60~~ 60 days are acceptable. If a licensee knows that a report will be late or needs an additional day or so to complete the report, the situation should be discussed with the appropriate NRC regional office. See Section 2.5 for further discussion of discovery date.

#### 5.1.2 LER Forwarding Letter and Cancellations

The cover letter forwarding an LER to the NRC should be signed by a responsible official. There is no prescribed format for the letter. The date the letter is issued and the report date should be the same. Licensees are encouraged to include the NRC resident inspector and the Institute of Nuclear Power Operations (INPO) in their distribution. Multiple LERs can be forwarded by one forwarding letter.

Cancellations of LERs submitted should be made by letter. The letter should state that the LER is being canceled (i.e., formally withdrawn). The bases for the cancellation should be explained

so that the staff can understand and review the reasons supporting the determination. The notice of cancellation will be filed and stored with the LER and acknowledgement made in various automated data systems. The LER will be removed from the LER data base.

### 5.1.3 Report Legibility

#### §50.73(e)

"The reports and copies that licensees are required to submit to the Commission under the provisions of this section must be of sufficient quality to permit legible reproduction and micrographic processing."

No further explanation is necessary.

### 5.1.4 Voluntary LERs

Indicate information-type LERS (i.e., voluntary LERs) by checking the "Other" block in Item 11 of the LER form and type "Voluntary Report" in the space immediately below the block. Also give a sequential LER number to the voluntary report as noted in Section 5.2.4(5). Because not all requirements of §50.73(b), "Contents," may pertain to some voluntary reports, licensees should develop the content of such reports to best present the information associated with the situation being reported.

See Section 2.7 for additional discussion of voluntary LERs.

### 5.1.5 Supplemental Information and Revised LERs

#### §50.73(c)

"The Commission may require the licensee to submit specific additional information beyond that required by paragraph (b) of this section if the Commission finds that supplemental material is necessary for complete understanding of any unusually complex or significant event. These requests for supplemental information will be made in writing and the licensee shall submit, as specified in §50.4, the requested information as a supplement to the initial LER."

This provision authorizes the NRC staff to require the licensee to submit specific supplemental information.

If an LER is incomplete at the time of original submittal or if it contains significant incorrect information of a technical nature, the licensee should use a revised report to provide the additional information or to correct technical errors discovered in the LER. Identify the revision to the original LER in the LER number as described in Section 5.2.3 Item (6).

The revision should be complete and should not contain only supplementary or revised information to the previous LER because the revised LER will replace the previous report in the computer file. In addition, indicate in the text on the LER form the revised or supplementary information by placing a vertical line in the margin.

If an LER mentions that an engineering study was being conducted, report the results of the study in a revised LER only if it would significantly change the reader's perception of the course, significance, implications, or consequences of the event or if it results in substantial changes in the corrective action planned by the licensee.

Use revisions only to provide additional or corrected information about a reported event. Do not use a revision to report subsequent failures of the same or like component, except as permitted in 10 CFR 50.73. Some licensees have incorrectly used revisions to report new events that were discovered months after the original event because they were loosely related to the original event. These revisions had different event dates and discussed new, although similar, events. Report events of this type as new LERs and not as revisions to previous LERs.

#### **5.1.6 Special Reports**

There are a number of requirements in various sections of the technical specifications that require reporting of operating experience that is not covered by 10 CFR 50.73. If LER forms are used to submit special reports, check the "Other" block in item 11 of the form and type "Special Report" in the space immediately below the block. The provisions of §50.73(b) may not be applicable or appropriate in a special report. Develop the content of the report to best present the information associated with the situation being reported. In addition, if the LER form is used to submit a special report, use a report number from the sequence used for LERs.

If an event is reportable both under 10 CFR 50.73 and as a special report, check the block in Item 11 for the applicable section of 50.73 as well as the "Other" block for a special report. The content of the report should depend on the reportable situation.

#### **5.1.7 Appendix J Reports (Containment Leak Rate Test Reports)**

A licensee must perform containment integrated and local leak rate testing and report the results as required by Appendix J to 10 CFR Part 50. When the leak rate test identifies a 10 CFR 50.73 reportable situation (see Section 3.2.4 or 3.3.1 of this report), submit an LER and include the results in an Appendix J report by reference, if desired. The LER should address only the reportable situation, not the entire leak rate test.

#### **5.1.8 10 CFR Part 21 Reports**

10 CFR Part 21, "Reporting of Defects and Noncompliance," as amended during 1991, encourages licensees of operating nuclear power plants to reduce duplicate evaluation and reporting effort by evaluating deviations in basic components under the 10 CFR 50.72, 50.73, and 73.71 reporting criteria. As indicated in 10 CFR 21.2(c) "For persons licensed to operate a nuclear power plant under Part 50 of this chapter, evaluation of potential defects and appropriate reporting of defects under §§ 50.72, 50.73, or § 73.71 of this chapter satisfies each person's evaluation, notification, and reporting obligation to report defects under this part ...."

As discussed in the Statement of Considerations for 10 CFR 21<sup>(19)</sup>, the only case where a defect in a basic component of an operating reactor might be reportable under Part 21, but not under §§ 50.72, 50.73, or 73.71 would involve Part(s) on the shelf. This type of defect, if it does not represent a condition reportable under §§ 50.72 or 50.73, might still represent a condition reportable under 10 CFR Part 21.

For an LER, if the defect meets one of the criteria of 10 CFR 50.73, check the applicable paragraph in Item 11 of NRC Form 366 (LER Form). Licensees are also encouraged to check the "Other" block and indicate "Part 21" in the space immediately below if the defect in a basic component could create a substantial safety hazard. The wording in Item 16 ("Abstract") and Item 17 ("Text") should state that the report constitutes a Part 21 notification. If the defect is applicable to other facilities at a multi-unit site, a single LER may be used by indicating the other involved facilities in Item 8 on the LER Form.

### **5.1.9 Section 73.71 Reports**

Submit events or conditions that are reportable under 10 CFR 73.71 using the LER forms with the appropriate blocks in Item 11 checked. If the report contains safeguards information as defined in 10 CFR 73.21, the LER forms may still be used, but should be appropriately marked in accordance with 10 CFR 73.21. Include safeguards and security information only in the narrative and not in the abstract. In addition, the text should clearly indicate the information that is safeguards or security information. Finally, the requirements of §73.21(g) must be met when transmitting safeguards information. For additional guidelines on 10 CFR 73.71 reporting, see Regulatory Guide 5.62, Revision 1, "Reporting of Safeguards Events," November 1987; NUREG-1304, "Reporting of Safeguards Events," February 1988; and Generic Letter 91-03, "Reporting of Safeguards Events," March 6, 1991.

If the LER contains proprietary information, mark it appropriately in Item 17 (text) on of the LER form. Include proprietary information only in the narrative and not in the abstract. In addition, indicate clearly in the narrative the information that is proprietary. Finally, the requirements of §2.790(b) must be met when transmitting proprietary information.

### **5.1.10 Availability of LER Forms**

The NRC will provide LER forms (i.e., NRC Forms 366, 366A, and 366B) free of charge. Copies may be obtained by writing to the NRC Records Management Branch, Office of the Chief Information Officer, US Nuclear Regulatory Commission, Washington, DC 20555. Electronic versions are also available. Licensees are encouraged to use these forms to assist the NRC's processing of the reports.

## **5.2 LER Content Requirements and Preparation Guidance**

~~Licensees are required to prepare an LER for those events or conditions that meet one or more of the criteria contained in §50.73(a). Paragraph 50.73(b), "Contents," specifies the information that an LER should contain with further explanation when appropriate.~~

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<sup>(19)</sup> 56 FR 36081, July 31, 1991.

### 5.2.1 Optical Character Reader

In 1986, the NRC decided to use an optical character reader (OCR) to read LER abstracts into NRC LER data bases (IE Information Notice No. 86-08, "Licensee Event Report (LER) Format Modification," February 3, 1986). At that time, licensees were asked to help reduce the number of errors incurred by the OCR as a result of incompatible print styles by using OCR-compatible typography for preparing LERs. Therefore, certain limitations have been placed on the use of type styles and symbols for the abstract and text of the LERs. These limitations are listed below. (See the Information Notice for details.)

To help reduce the number of errors incurred by the Optical Character Reader (OCR) used to read LER contents into NRC data bases, the following practices are suggested.

It is suggested that output be on typewriter or formed character (letter-quality or near letter-quality) printer (e.g., daisy wheel, laser, ink-jet).

It is suggested that output have an uneven right margin (i.e., we suggest that you not right justify output).

It is suggested that text of the abstract be kept at least ½-inch inside the border on all sides of the area designated for the abstract on the LER form. Text running into the border can interfere with scanning the document.

It is suggested that you do not use underscore, do not use bold print, do not use Italic print style, do not end any lines with a hyphen and do not use paragraph indents. Instead, print copy single space with a blank line between paragraphs.

Limitations on the use of symbols in the textual areas:

- Spell out the word "degree."
- Use <=/ for "less than or equal to."
- Use >=/ for "greater than or equal to."
- Use +/- for "plus or minus."
- Spell out all Greek letters.

Do not use exponents. A number should either be expressed as a decimal, spelled out, or preferably designated in terms of "E" (E field format). For example,  $4.2 \times 10^{-6}$  could be expressed as 4.2E-6, 0.0000042, or 4.2 x 10(-6).

Define all abbreviations and acronyms in both the text and the abstract and explain all component designators the first time they are used (e.g., the emergency service water pump 1-SW-P-1A)

### 5.2.2 Narrative Description or Text (NRC Form 366A, Item 17)

(1) General

**§50.73(b)(2)(i)**

The LER shall contain: "A clear, specific, narrative description of what occurred so that knowledgeable readers conversant with the design of commercial nuclear power plants, but not familiar with the details of a particular plant, can understand the complete event."

There is no prescribed format for the LER text; write the narrative in a format that most clearly describes the event. After the narrative is written, however, review the appropriate sections of §50.73(b) to make sure that applicable subjects have been adequately addressed. It is helpful to use headings to improve readability. For example, some LERs employ major headings such as event description, safety consequences, corrective actions, and previous similar events and subheadings such as initial conditions, dates and times, event classification, systems status, event or condition causes, failure modes, method of discovery, component information, immediate corrective actions, and actions to prevent recurrence.

Explain exactly what happened during the entire event or condition, including how systems, components, and operating personnel performed. Do not cover specific hardware problems in excessive detail. Describe unique characteristics of a plant as well as other characteristics that influenced the event (favorably or unfavorably). Avoid using plant-unique terms and abbreviations, or, as a minimum, clearly define them. The audience for LERs is large and does not necessarily know the details of each plant.

Include the root causes, the plant status before the event, and the sequence of occurrences. Describe the event from the perspective of the operator (i.e., what the operator saw, did, perceived, understood, or misunderstood). Specific information that should be included, as appropriate, is described in paragraphs 50.73(b)(2)(ii), (b)(3), (b)(4), and (b)(5) of the rule and separately in the following sections.

If several systems actuate during an event, describe all aspects of the complete event, including all actuations sequentially, and those aspects that by themselves would not be reportable. For example, if a single component failure (generally not reportable) occurs following a reactor scram (reportable), describe the component failure in the narrative of the LER for the reactor scram. It is necessary to discuss the performance and status of equipment important for defining and understanding what happened and for determining the potential implications of the event.

Paraphrase pertinent sections of the latest submitted safety analysis report (SAR) rather than referencing them because not all organizations or individuals have access to SARs. Extensive cross-referencing would be excessively time consuming considering the large number of LERs and large number of reviewers that read each LER. Ensure that each applicable component's safety-significant effect on the event or condition is clearly and completely described.

Do not use statements such as "this event is not significant with respect to the health and safety of the public" without explaining the basis for the conclusion.

**§50.73(b)(2)(ii)(A)**

The narrative description must include: "Plant operating conditions before the event."

Describe the plant operating conditions such as power level or, if not at power, describe mode, temperature, and pressure that existed before the event.

**§50.73(b)(2)(ii)(B)**

The narrative description must include: "Status of structures, components, or systems that were inoperable at the start of the event and that contributed to the event."

If there were no structures, systems, or components that were inoperable at the start of the event and contributed to the event, so state. Otherwise, identify SSCs that were inoperable and contributed to the initiation or limited the mitigation of the event. This should include alternative mitigating SSCs that are a part of normal or emergency operating procedures that were or could have been used to mitigate, reduce the consequences of, or limit the safety implications of the event. Include the impact of support systems on mitigating systems that could have been used.

**§50.73(b)(2)(ii)(C)**

The narrative description must include: "Dates and approximate times of occurrences."

For a transient or system actuation event, the event date and time are the date and time the event actually occurred. If the event is a discovered condition for which the occurrence date is not known, the event date should be specified as the discovery date. However, a discussion of the best estimate of the event date and its basis should be provided in the narrative. For example, if a design deficiency was identified on March 27, 1997 that involved a component installed during refueling in the spring of 1986, and only the discovery date is known with certainty, the event date should be specified as the discovery date. A discussion should be provided that describes, based on the best information available, the most likely time that the design flaw was introduced into the component (e.g., by manufacturer or by plant engineering prior to procurement). The length of time that the component was in service should also be provided (i.e., when it was installed).

Discuss both the discovery date and the event date if they differ. If an LER is not submitted within ~~90~~60 days from the event date, explain the relationship between the event date, discovery date, and report date in the narrative. See Section 2.5 for further discussion of discovery date.

Give dates and approximate times for all major occurrences discussed in the LER (e.g.,

discoveries; immediate corrective actions; systems, components, or trains declared inoperable or operable; reactor trip; actuation and termination of equipment operation; and stable conditions achieved). In particular, for standby pumps and emergency generators, indicate the length of time of operation and any intermittent periods of shutdown or inoperability during the event. Include an estimate of the time and date of failure of systems, components, or trains if different from the time and date of discovery. A chronology may be used to clarify the timing of personnel and equipment actions.

For equipment that was inoperable at the start of the event, provide an estimate of the time the equipment became inoperable and the last time the equipment was demonstrated to be capable of performing its safety function. Indicate the basis for this conclusion (e.g., a test was successfully run or the equipment was operating). For equipment that failed, provide the failure time and the last time the equipment was demonstrated to be capable of performing its safety function. Also provide the basis for this conclusion (e.g., a test was performed or the equipment was operating).

Components such as valves and snubbers may be tested over a period of several weeks. During this period, a number of inoperable similar components may be discovered.<sup>(20)</sup> In such cases, similar failures that are reportable and that are discovered during a single test program within the 30-60 days of discovery of the first failure may be reported as one LER. For similar failures that are reportable under Section 50.73 criteria and that are discovered during a single test program or activity, report all failures that occurred within the first 30-60 days of discovery of the first failure on one LER. However, the 30-60-day clock starts when the first reportable event is discovered. State in the LER text (and code the information in Items 14 and 15) that a supplement to the LER will be submitted when the test is completed. Submit a revision to the original LER when the test is completed. Include all the failures, including those reported in the original LER, in the revised LER (i.e., the revised LER should stand alone).

## (2) Failures and Errors

### **§50.73(b)(2)(ii)(D)**

The narrative description must include: "The cause of each component or system failure or personnel error, if known."

Include the root cause(s) identified for each component or system failure (or fault) or personnel error. Contributing factors may be discussed as appropriate. For example, a valve stem breaking could have been caused by a limit switch that had been improperly adjusted during maintenance; in this case, the root cause might be determined to be personnel error and additional discussion could focus on the limit switch adjustment. If the personnel error is determined to have been caused by deficient procedures or inadequate personnel training, this should be explained.

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<sup>(20)</sup> Note that inoperable similar components might indicate common cause failures of independent trains or channels, which are reportable under §50.73(a)(2)(vii); see Section 3.3.4 for further discussion.

If the cause of a failure cannot be readily determined and the investigation is continuing, the LER should indicate what additional investigation is planned. A supplemental LER should be submitted following the additional investigation if substantial information is identified that would significantly change a reader's perception of the course or consequences of the event, or if there are substantial changes in the corrective actions planned by the licensee.

**§50.73(b)(2)(ii)(E)**

The narrative description must include: "The failure mode, mechanism, and effect of each failed component, if known."

Include the failure mode, mechanism (immediate cause), and effect of each failed component in the narrative. The effect of the failure on safety systems and functions should be fully described. Identify the specific piece part that failed and the specific trains and systems rendered inoperable or degraded. Identify all dependent systems rendered inoperable or degraded. Indicate whether redundant trains were operable and available.

If the equipment is degraded, but not failed, describe the degradation and its effects and indicate why the equipment would still perform its intended function.

**§50.73(b)(2)(ii)(F)**

The narrative description must include: "(1) The Energy Industry Identification System component function identifier and system name of each component or system referred to in the LER.

(1i) The Energy Industry Identification System is defined in: IEEE Std 803-1983 (May 16, 1983) Recommended Practices for Unique Identification in Power Plants and Related Facilities--Principles and Definitions.

(2ii) IEEE Std 803-1983 has been approved for incorporation by reference by the Director of the Federal Register.

(2) A notice of any changes made to the material incorporated by reference will be published in the Federal Register. Copies may be obtained from the Institute of Electrical and Electronics Engineers, 345 East 47th Street, New York, NY 10017. IEEE Std 803-1983 is available for inspection at the NRC's Technical Library, which is located at the Two White Flint North Building, 11545 Rockville Pike, Rockville, Maryland-20852-2738; and at the Office of the Federal Register, ~~800 North Capitol~~ 1100 L Street, NW., Suite 700, Washington, DC.

"  
~~Note: The NRC library is now located in the Two White Flint North building, 11545 Rockville Pike, Rockville, Maryland.~~

The system name may be either the full name (e.g., reactor coolant system) or the two-letter system code (such as AB for the reactor coolant system). However, when the name is long (e.g., low-pressure coolant injection system), the system code (e.g., BO) should be used. If the full names are used, The Energy Industry Identification System (EIIIS) component function

identifier and/or system identifier (i.e., the two letter code) should be included in parentheses following the first reference to a component or system in the narrative. The component function identifiers and system identifiers need not be repeated with each subsequent reference to the same component or system.

If a component within the scope of the Equipment Performance and Information Exchange (EPIX) System is involved, the system and train designation should be consistent with the EIS used in EPIX.

**§50.73(b)(2)(ii)(G)**

The narrative description must include the following specific information as appropriate for the particular event: "For failures of components with multiple functions, include a list of systems or secondary functions that were also affected."

No further explanation is necessary.

**§50.73(b)(2)(ii)(H)**

The narrative description must include: "For failure that rendered a train of a safety system inoperable, an estimate of the elapsed time from the discovery of the failure until the train was returned to service."

No further explanation is necessary.

**§50.73(b)(2)(ii)(I)**

The narrative description must include: "The method of discovery of each component or system failure or procedural error."

Explain how each component failure, system failure, personnel error, or procedural deficiency was discovered. Examples include reviewing surveillance procedures or results of surveillance tests, pre-startup valve lineup check, performing quarterly maintenance, plant walkdown, etc.

**§50.73(b)(2)(ii)(J)**

The narrative description must include:

~~(J) (1) Operator actions that affected the course of the event, including operator errors, procedural deficiencies, or both, that contributed to the event.~~

**(continued on next page)**

**§50.73(b)(2)(ii)(J) (continued)**

- ~~\_\_\_\_\_ (2) For each personnel error, the licensee shall discuss:~~
- ~~\_\_\_\_\_ (i) Whether the error was a cognitive error (e.g., failure to recognize the actual plant condition, failure to realize which systems should be functioning, failure to recognize the true nature of the event) or a procedural error;~~
- ~~\_\_\_\_\_ (ii) Whether the error was contrary to an approved procedure, was a direct result of an error in an approved procedure, or was associated with an activity or task that was not covered by an approved procedure;~~
- ~~\_\_\_\_\_ (iii) Any unusual characteristics of the work location (e.g., heat, noise) that directly contributed to the error; and~~
- ~~\_\_\_\_\_ (iv) The type of personnel involved (i.e., contractor personnel, utility-licensed operator, utility nonlicensed operator, other utility personnel). For each human performance related root cause, the licensee shall discuss the cause(s) and circumstances.~~

Human performance often influences the outcome of nuclear power plant events. Human error is known to contribute to more than half of the LERs. The LER rule identifies the types of reactor events and problems that are believed to be significant and useful to the NRC in its effort to identify and resolve threats to public safety. It is designed to provide the information necessary for engineering studies of operational anomalies and trends and patterns analysis of operational occurrences including human performance.

Generally, the criteria of Section 50.73(b)(2)(i) require a clear, specific narrative so that knowledgeable readers can understand the complete event. Further, for each human performance related root cause, the criteria of Section 50.73(b)(2)(ii)(J) require a description of ~~(1) operator actions that affected the course of the event and~~ (2) for each personnel error, additional specific information as detailed in the rule. the cause(s) and circumstances. In order to support an understanding of human performance issues related to the event, the narrative should address the factors discussed below to the extent they apply.

For example, if an operator error that affected the course of the event was due to a procedural problem, indicate the nature of the procedural problem such as missing procedure, procedure inadequate due to technical deficiency, etc.

Personnel errors and human performance related issues may be in the areas of procedures, training, communication, human engineering, management, and supervision. For example, in the area of procedures, errors might be due to missing procedures, procedures which are inadequate due to technical or human factors deficiencies, or which have not been maintained current. In the area of training, errors may be the result of a failure to provide training, having provided inadequate training, or as the result of training (such as simulator training or on-the-job training) that does not provide an environment comparable to that in the plant. Communications errors may be due to inadequate, untimely, misunderstood, or missing communication or due to the quality of the communication equipment. Human engineering issues include those related to the interface or lack thereof between the human and the machine (such as size, shape, location, function or content of displays, controls, equipment or labels) as well as environmental issues such as lighting, temperature, noise, radiation and work

~~area layout. Management errors might be due to management expectations, corrective actions, root cause determinations, or audits which are inadequate, untimely or missing. In the area of supervision, errors may be the result of a lack of supervision, inadequate supervision, job staffing, overtime, scheduling and planning, work practices (such as briefings, logs, work packages, team work, decision making, and housekeeping) or because of inadequate verification, awareness or self-checking.~~

(1) The cause(s), including any relation to the areas of:

- (a) Procedures, where errors may be due to missing procedures, procedures which are inadequate due to technical or human factors deficiencies, or which have not been maintained current.
- (b) Training, where errors may be the result of a failure to provide training, having provided inadequate training, or as the result of training (such as simulator training or on-the-job training) that does not provide an environment comparable to that in the plant.
- (c) Communications, where errors may be due to inadequate, untimely, misunderstood, or missing communication or be due to the quality of the communication equipment.
- (d) Human-system interface, such as size, shape, location, function or content of displays, controls, equipment or labels, as well as environmental issues such as lighting, temperature, noise, radiation and work area layout.
- (e) Supervision and oversight, where errors may be the result of inadequate command and control, work control, corrective actions, self-evaluation, staffing, task allocation, overtime, or schedule design.
- (f) Fitness for duty, where errors may be due to the influence of any substance legal or illegal, or mental or physical impairment, e.g., mental stress, fatigue or illness.
- (g) Work practices such as briefings, logs, work packages, team work, decision making, housekeeping, verification, awareness or attention.

(2) The circumstances, including:

- (a) The personnel involved, whether they are contractor or utility personnel, whether or not they are licensed, and the department for which they work.
- (b) The work activity being performed and whether or not there were any time or situational pressures present.

**§50.73(b)(2)(ii)(L)**

The narrative description must include: "The manufacturer and model number (or other identification) of each component that failed during the event."

The manufacturer and model number (or other identification, such as type, size, or manufacture date) also should be given for each component found failed during the course of the event. An example of other identification could be (for a pipe rupture) size, schedule, or material composition.

#### (4) Safety System Responses

##### **§50.73(b)(2)(ii)(K)**

The narrative description must include: "Automatically and manually initiated safety system responses."

The LER should include a discussion of each specific system that actuated or failed to actuate. Do not limit the discussion to ESFs. Indicate whether or not the equipment operated successfully. For some systems such as HPCI, RCIC, RHR, and AFW, the type of actuation may not be obvious. In those cases indicate the specific equipment that actuated or should have actuated, by train, compatible with EPIX train definitions (e.g., AFW Train B). Indicate the mode of operation such as injecting into the reactor vessel, recirculation, pressure control, and any subsequent mode of operation during the event.

#### **5.2.3 Assessment of Safety Consequences**

##### **§50.73(b)(3)**

The LER shall contain: An assessment of the safety consequences and implications of the event. This assessment must include:

- (i) The availability of other systems or components that could have performed the same function as the components and systems that failed during the event, and
- (ii) For events that occurred when the reactor was shutdown, the availability of systems or components that are needed to shutdown the reactor and maintain safe shutdown conditions, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident.

Give a summary assessment of the actual and potential safety consequences and implications of the event, including the basis for submitting the report. Evaluate the event to the extent necessary to fully assess the safety consequences and safety margins associated with the event.

Include an assessment of the event under alternative conditions if the incident would have been more severe (e.g., the plant would have been in a condition not analyzed in its latest SAR) under reasonable and credible alternative conditions, such as a different operating mode. For example, if an event occurred while the plant was at low power and the same event could have occurred at full power, which would have resulted in considerably more serious consequences, this alternative condition should be assessed and the consequences reported.

Reasonable and credible alternative conditions may include normal plant operating conditions, potential accident conditions, or additional component failures, depending on the event. Normal alternative operating conditions and off-normal conditions expected to occur during the life of the plant should be considered. The intent of this section is to obtain the result of the considerations that are typical in the conduct of routine operations, such as event reviews, not to require extraordinary studies.

For events that occurred when the reactor was shutdown, discuss the availability of systems or components that are needed to shutdown the reactor and maintain safe shutdown conditions, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident.

#### 5.2.4 Corrective Actions

##### §50.73(b)(4)

The LER shall contain: "A description of any corrective actions planned as a result of the event, including those to reduce the probability of similar events occurring in the future."

Include whether the corrective action was or is planned to be implemented. Discuss repair or replacement actions as well as actions that will reduce the probability of a similar event occurring in the future. For example, "the pump was repaired and a discussion of the event was included in the training lectures." Another example, "although no modification to the instrument was deemed necessary, a caution note was placed in the calibration procedure for the instrument before the step in which the event was initiated."

In addition to a description of any corrective actions planned as a result of the event, describe corrective actions on similar or related components that were done, or are planned, as a direct result of the event. For example, if pump 1 failed during an event and required corrective maintenance and that same maintenance also was done on pump 2, so state.

If a study was conducted, and results are not available within the ~~30~~-60-day period, report the results of the study in a revised LER if they result in substantial changes in the corrective action planned. (See Section 5.1.6 for further discussion of submitting revised LERs.)

#### 5.2.5 Previous Occurrences

##### §50.73(b)(5)

The LER shall contain: "Reference to any previous similar events at the same plant that are known to the licensee."

The term "previous occurrences" should include previous events or conditions that involved the same underlying concern or reason as this event, such as the same root cause, failure, or

sequence of events. For infrequent events such as fires, a rather broad interpretation should be used (e.g., all fires and, certainly, all fires in the same building should be considered previous occurrences). For more frequent events such as ESF actuations, a narrower definition may be used (e.g., only those scrams with the same root cause). The intent of the rule is to identify generic or recurring problems.

The licensee should use engineering judgment to decide how far back in time to go to present a reasonably complete picture of the current problem. The intent is to be able to see a pattern in recurring events, rather than to get a complete 10- or 20-year history of the system. If the event was a high-frequency type of event, 2 years back may be more than sufficient.

Include the LER number(s), if any, of previous similar events. Previous similar events are not necessarily limited to events reported in LERs. If no previous similar events are known, so state. If any earlier events, in retrospect, were significant in relation to the subject event, discuss why prior corrective action did not prevent recurrence.

#### **5.2.6 Abstract (NRC Form 366, Item 16)**

##### **§50.73(b)(1)**

The LER shall contain: "A brief abstract describing the major occurrences during the event, including all component or system failures that contributed to the event and significant corrective action taken or planned to prevent recurrence."

Provide a brief abstract describing the major occurrences during the event, including all actual component or system failures that contributed to the event, all relevant operator errors or violations of procedures, the root cause(s) of the major occurrence(s), and the corrective action taken or planned for each root cause. If space does not permit describing failures, at least indicate whether or not failures occurred. Limit the abstract to 1400 characters (including spaces), which is approximately 15 lines of single-spaced typewritten text. Do not use EIS component function identifiers or the two-letter codes for system names in the abstract.

The abstract is generally included in the LER data base to give users a brief description of the event to identify events of interest. Therefore, if space permits, provide the numbers of other LERs that reference similar events in the abstract.

As noted in Section 5.1.10, do not include safeguards, security, or proprietary information in the abstract.

#### **5.2.7 Other Fields on the LER Form**

##### **(1) Facility Name (NRC Form 366, Item 1)**

Enter the name of the facility (e.g., Indian Point, Unit 1) at which the event occurred. If the event involved more than one unit at a station, enter the name of the nuclear facility with the lowest nuclear unit number (e.g., Three Mile Island, Unit 1).

(2) Docket Number (NRC Form 366, Item 2)

Enter the docket number (in 8-digit format) assigned to the unit. For example, the docket number for Yankee-Rowe is 05000029. Note the use of zeros in this example.

(3) Page Number (NRC Form 366, Item 3)

Enter the total number of pages included (including figures and tables that are attached to Item 17 Text) in the LER package. For continuation sheets, number the pages consecutively beginning with page 2. The LER form, including the abstract and other data is pre-numbered on the form as page 1 of \_.

(4) Title (NRC Form 366, Item 4)

The title should include a concise description of the principal problem or issue associated with the event, the root cause, the result (why the event was required to be reported), and the link between them, if possible. It is often easier to form the title after writing the assessment of the event because the information is clearly at hand.

"Licensee Event Report" should not be used as a title. The title "Reactor Trip" is considered inadequate, because the root cause and the link between the root cause and the result are missing. The title "Personnel Error Causes Reactor Trip" is considered inadequate because of the innumerable ways in which a person could cause a reactor trip. "Technician Inadvertently Injected Signal Resulting in a Reactor Trip" would be a better title.

(5) Event Date (NRC Form 366, Item 5)

Enter the date on which the event occurred in the eight spaces provided. There are two spaces for the month, two for the day, and four for the year, in that order. Use leading zeros in the first and third spaces when appropriate. For example, June 1, 1987, would be properly entered as 06011987.

If the date on which the event occurred cannot be clearly defined, use the discovery date. See Section 2.11 of this report for further discussion of discovery date.

(6) Report Number (NRC Form 366, Item 6)

The LER number consists of three parts: (a) the four digits of the event year (based on event date), (b) the sequential report number, and (c) a revision number. The numbering system is shown in the diagram below; the event occurred in the year 1991, it was the 45th event of that year, and the submittal was the 1st revision to the original LER for that event.

<u>Event Year</u>		<u>Sequential Report Number</u>		<u>Revision Number</u>
1991	-	045	-	01

Event Year: Enter the four digits. The event year should be based on the event date (Item 4).

**Sequential Report Number:** As each reportable event is reported for a unit during the year, it is assigned a sequential number. For example, for the 15th and 33rd events to be reported in a given year at a given unit, enter 015 and 033, respectively, in the spaces provided. Follow the guidelines below to ensure consistency in the sequential numbering of reports.

- Each unit should have its own set of sequential report numbers. Units at multi-unit sites should not share a set of sequential report numbers.
- The sequential number should begin with 001 for the first event that occurred in each calendar year, using leading zeros for sequential numbers less than 100.
- For an event common to all units of a multi-unit site, assign the sequential number to the lowest numbered nuclear unit.
- If a sequential number was assigned to an event, and it was subsequently determined that the event was not reportable, a "hole" in the series of LER numbers would result. The NRC would prefer that licensees reuse a sequential number rather than leave holes in the sequence. A sequential LER number may be reused even if the event date was later than subsequent reports.

If the licensee chooses not to reuse the number, write a brief letter to the NRC noting that "LER number xxx for docket 005000XXX will not be used."

**Revision Number:** The revision number of the original LER submitted is 00. The revision number for the first revision submitted should be 01. Subsequent revisions should be numbered sequentially (i.e., 02, 03, 04).

(7) Report Date (NRC Form 366, Item 7)

Enter the date the LER is submitted to the NRC in the eight spaces provided, as described in Section 5.2.4(4) above.

(8) Other Facilities (NRC Form 366, Item 8)

When a situation is discovered at one unit of a facility that applies to more than the one unit, submit a single LER. LER form items 1, 2, 6, 9, and 10 should refer to the unit primarily affected, or, if both units were affected approximately equally, to the lowest numbered nuclear unit.

The intent of the requirement is to name the facility in which the primary event occurred, whether or not that facility is the lowest numbered of the facilities involved. The automatic use of the lowest number should only apply to cases where both units are affected approximately equally. Item 8 only should indicate the other unit(s) affected. The abstract and the text should describe how the event affected all units.

Enter the facility name and unit number and docket number (see Sections 5.2.4(1) and 5.2.4(2) for format) of any other units at that site that were directly affected by the event (e.g., the event included shared components, the LER described a tornado that threatened both units of a two-unit plant).

(9) Operating Mode (NRC Form 366, Item 9)

Enter the operating mode of the unit at the time of the event as defined in the plant's technical specifications in the single space provided. For plants that have operating modes such as hot shutdown, cold shutdown, and operating, but do not have numerical operating modes (e.g., Mode 5), place the letter N in Item 9 and describe the operating mode in the text.

(10) Power Level (NRC Form 366, Item 10)

Enter the percent of licensed thermal power at which the reactor was operating when the event occurred. For shutdown conditions, enter 000. For all other operating conditions, enter the correct numerical value (estimate power level if it is not known precisely), using leading zeros as appropriate (e.g., 009 for 9-percent power). Significant deviations in the operating power in the balance of plant should be clarified in the text.

(11) Reporting Requirements (NRC Form 366, Item 11)

Check one or more blocks according to the reporting requirements that apply to the event. A single event can meet more than one reporting criterion. For example: if as a result of sabotage, reportable under §73.71(b), a safety system failed to function, reportable under §50.73(a)(2)(v), and the net result was a release of radioactive material in a restricted area that exceeded the applicable license limit, reportable under §20.2203(a)(3)(i), prepare a single LER and check the three boxes for paragraphs 73.71(b), 50.73(a)(2)(v), and 20.2203(a)(3)(i).

In addition, an event can be reportable as an LER even if it does not meet any of the criteria of 10 CFR 50.73. For example, a case of attempted sabotage (§73.71(b)) that does not result in any consequences that meet the criteria in 50.73 can be reported using the "Other" block. Use the "Other" block if a reporting requirement other than those specified in item 11 was met. Specifically describe this other reporting requirement in the space provided below the "Other" block and in the abstract and text.

(12) Licensee Contact (NRC Form 366, Item 12)

**§50.73(b)(6)**

The LER shall contain: "The name and telephone number of a person within the licensee's organization who is knowledgeable about the event and can provide additional information concerning the event and the plant's characteristics."

Enter the name, position title, and work telephone number (including area code) of a person who can provide additional information and clarification for the event described in the LER.

(13) Component Failures (NRC Form 366, Item 13)

Enter the appropriate data for each component failure described in the event. A failure is defined as the termination of the ability of a component to perform its required

function. Unannounced failures are not detected until the next test; announced failures are detected by any number of methods at the instant of occurrence.

If multiple components of the same type failed and all of the information required in Item 13 (i.e., cause, system, component, etc.) was the same for each component, then only a single entry is required in Item 13. Clearly define the number of components that failed in the abstract and text.

The component information elements of this item are discussed below.

**Cause:** Enter the cause code as shown below. If more than one cause code is applicable, enter the cause code that most closely describes the root cause of the failure.

**Cause**

**Code      Classification and Definition**

- A    Personnel Error is assigned to failures attributed to human errors. Classify errors made because written procedures were not followed or because personnel did not perform in accordance with accepted or approved practice as personnel errors. Do not include errors made as a result of following incorrect written procedures in this classification.
  
- B    Design, Manufacturing, Construction/Installation is assigned to failures reasonably attributed to design, manufacture, construction, or installation of a system, component, or structure. For example, include failures that were traced to defective materials or components otherwise unable to meet the specified functional requirements or performance specifications in this classification.
  
- C    External Cause is assigned to failures attributed to natural phenomena. A typical example would be a failure resulting from a lightning strike, tornado, or flood. Also assign this classification to man-made external causes that originate off site (e.g., an industrial accident at a nearby industrial facility).
  
- D    Defective Procedure is assigned to failures caused by inadequate or incomplete written procedures or instructions.
  
- E    Management/Quality Assurance Deficiency is assigned to failures caused by inadequate management oversight or management systems (e.g., major breakdowns in the licensee's administrative controls, preventive maintenance program, surveillance program, or quality assurance controls, inadequate root cause determination, inadequate corrective action).
  
- X    Other is assigned to failures for which the proximate cause cannot be identified or which cannot be assigned to one of the other classifications.

**System:** Enter the two-letter system code from Institute of Electrical and Electronics Engineers (IEEE) Standard 805-1984, "IEEE Recommended Practice for System Identification in Nuclear Power Plants and Related Facilities," March 27, 1984. Copies may be obtained from the Institute of Electrical and Electronics Engineers, 345 East 47th Street, New York, NY 10017.

Component: Enter the applicable component code from IEEE Standard 803A-1983, "IEEE Recommended Practice for Unique Identification in Power Plants and Related Facilities - Component Function Identifiers."

Component Manufacturer: Enter the four character alphanumeric reference code. If the manufacturer is one used in EPIX, use the manufacturer name as it appears in EPIX.

Reportable to EPIX: Enter a "Y" if the failure is reportable to EPIX and an "N" if it is not reportable.

Include in the LER text and in item 13 of the LER Form any component failure involved in the event, not just components within the scope of EPIX or EIS.

Failure Continuation Sheet (NRC Form 366B): If more than four failures need to be coded, use one or more of the failure continuation sheets (NRC Form 366B). Code the entries in Items 1, 2, 3, and 6 of the failure continuation sheet to match entries of these items on the initial page of the LER. Complete item 13 in the same manner as item 13 on the basic LER form. Do not repeat failures coded on the basic LER form on the failure continuation sheet. Place any failure continuation sheets after any text continuation sheets and include those sheets in the total number of pages for the LER.

(14) Supplemental Report (NRC Form 366, Item 14)

Check the "Yes" block if the licensee plans to submit a followup report. For example, if a failed component had been returned to the manufacturer for additional testing and the results of the test were not yet available when the LER was submitted, a followup report would be submitted.

(15) Expected Submission Date of Supplemental Report (NRC Form 366, Item 15)

Enter the expected date of submission of the supplemental LER, if applicable. See Section 5.2.4(4) for the proper date format. The expected submission date is a target/planning date; it is not a regulatory commitment.

(16) LER Text Continuation Sheet (NRC Form 366A)

Use one or more additional text continuation sheets of the LER Form 366A to continue the narrative, if necessary. There is no limit on the number of continuation sheets that may be included.

Drawings, figures, tables, photographs, and other aids may be included with the narrative to help readers understand the event. If possible, provide the aids on the LER form (i.e., NRC Form 366A). In addition, care should be taken to ensure that drawings and photographs are of sufficient quality to permit legible reproduction and micrographic processing. Avoid oversized drawings (i.e., larger than 8 ½ x 11).

### 5.2.8 Examples of LER Forms

Examples of LER forms are provided on the following pages.

<b>NRC FORM 366</b> (MM-YYYY)		<b>U.S. NUCLEAR REGULATORY COMMISSION</b>			<b>APPROVED BY OMB NO. 3150-0104</b>			<b>EXPIRES MM-YYYY</b>		
<b>LICENSEE EVENT REPORT (LER)</b> (See reverse for required number of digits/characters for each block)					Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.					
FACILITY NAME (1)					DOCKET NUMBER (2) 05000			PAGE (3) 1 0		
TITLE (4)										
<b>EVENT DATE (5)</b>			<b>LER NUMBER (6)</b>			<b>REPORT DATE (7)</b>			<b>OTHER FACILITIES INVOLVED (8)</b>	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
			-	-						05000
									FACILITY NAME	DOCKET NUMBER
										05000
<b>OPERATING MODE (9)</b>		<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)</b>								
		20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(vii)(C)		
<b>POWER LEVEL (10)</b>		20.2201(d)		20.2203(a)(4)		Reserved		50.73(a)(2)(viii)(A)		
		20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iii)		50.73(a)(2)(viii)(B)		
		20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(iv)(A)		50.73(a)(2)(ix)		
		20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(A)		73.71(a)(4)		
		20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(B)		73.71(a)(5)		
		20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(C)		OTHER Specify in Abstract below or in NRC Form 366A		
		20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(v)(D)				
		20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(vii)(A)				
		20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(vii)(B)				
<b>LICENSEE CONTACT FOR THIS LER (12)</b>										
NAME					TELEPHONE NUMBER (Include Area Code)					
<b>COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)</b>										
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	
<b>SUPPLEMENTAL REPORT EXPECTED (14)</b>						<b>EXPECTED SUBMISSION DATE (15)</b>		MO	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).				NO						
<b>ABSTRACT</b> (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)										

**REQUIRED NUMBER OF DIGITS/CHARACTERS  
FOR EACH BLOCK**

<b>BLOCK NUMBER</b>	<b>NUMBER OF DIGITS/CHARACTERS</b>	<b>TITLE</b>
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIES	PAGE NUMBER
4	UP TO 76	TITLE
5	8 TOTAL 2 FOR MONTH 2 FOR DAY 4 FOR YEAR	EVENT DATE
6	9 TOTAL 4 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	8 TOTAL 2 FOR MONTH 2 FOR DAY 4 FOR YEAR	REPORT DATE
8	UP TO 18 -- FACILITY NAME 8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	VARIES CHECK ALL BOXES THAT APPLY	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER EPIX VARIES	EACH COMPONENT FAILURE
14	1 CHECK BOX THAT APPLIES	SUPPLEMENTAL REPORT EXPECTED
15	8 TOTAL 2 FOR MONTH 2 FOR DAY 4 FOR YEAR	EXPECTED SUBMISSION DATE

**LICENSEE EVENT REPORT (LER)**  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
	05000	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	OF
		--	--		

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Empty text area for the Licensee Event Report (LER) continuation.

