RULEMAKING ISSUE
AFFIRMATION

April 21, 2000 SECY-00-0093

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 AND FOR INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS (ISFSI) IN 10 CFR 72.216

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 and for ISFSI in 10 CFR 72.216.

BACKGROUND:

An advance notice of proposed rulemaking (ANPR) was published in the *Federal Register* on July 23, 1998. 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. The comment period for the proposed rule expired September 20, 1999. Twenty-seven comment letters were received, representing comments from 24 nuclear power plant licensees (utilities), two organizations of utilities, and one State agency.

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

In response to discussions at a briefing of the Advisory Committee on Reactor Safeguards (ACRS) on February 3, 2000, the staff held additional public meetings on February 25 and March 22, 2000, to facilitate the resolution of comments.

DISCUSSION:

In the final rule, the essential safety 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 safety 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 health and safety. It is designed to provide information needed for engineering studies of anomalies, trend analysis of occurrences, and identification of accident precursors. This enables the NRC to determine whether further action is needed to maintain or improve reactor safety.

The objectives of this rulemaking are as follows:

(1) To better align the reporting requirements with the NRC's current reporting needs for information to carry out its safety mission.

(2) To reduce the unnecessary reporting burden, consistent with the NRC's reporting needs associated with events of little or no safety significance.

(3) To clarify the reporting requirements where needed.

(4) Any changes should be consistent with NRC actions to improve integrated plant safety assessments.

The noteworthy issues are summarized below.

Outside the Design Basis of the Plant

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 which, in some cases, results in reporting of events with little safety significance. However, conditions outside the design basis of the plant would still be reportable if they are significant enough to qualify under other criteria, such as:

(1) *Plant in an unanalyzed condition that significantly degraded plant safety.*

(2) *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 and maintain it in a safe shutdown condition, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident.*

(3) *Condition or operation prohibited by the plant's technical specifications.*

(4) *Independent trains or channels inoperable due to a single cause or condition.*

(5) *Principal safety barrier seriously degraded.*

(6) *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.* This was proposed to ensure that design basis or other discrepancies would continued to be reported if the capability to perform a specified safety function is significantly degraded and the condition has generic implications.

Industry commenters objected strongly to the proposed new criterion, indicating that it would be: (1) unnecessary; (2) unclear and subject to widely varying interpretation; (3) overly burdensome, representing a significant increase in reporting requirements; and (4) not in accordance with the stated objectives of the rulemaking.

After consideration of the comments, the proposed new criterion has been modified to address the concerns raised in the comments. As modified, the new criterion requires reporting any *event or condition that as a result of a single cause could have prevented the fulfillment of a safety function for two or more trains or channels in different systems that are needed to: shut down the reactor and maintain it in a safe shutdown condition; remove residual heat; control the release of radioactive material; or mitigate the consequences of an accident.* Further, it excludes events that result from: (1) *a shared dependency among trains or channels that is a natural or expected consequence of the approved plant design;* or (2) *normal and expected wear or degradation.*

With these exclusions, the new criterion captures those events with enough generic significance that a single cause could have prevented the fulfillment of the safety function of multiple trains or channels, but:

(1) The event would not be captured by §§ 50.73(a)(2)(v) and 50.72(b)(3)(v) *[event or condition that could have prevented fulfillment of a safety function]* because the affected trains or channels are in different systems; and

(2) The event would not be captured by § 50.73(a)(2)(vii) *[common cause inoperability of independent trains or channels]* because the affected trains or channels are:

(a) Not assumed to be independent of each other in the plant's safety analysis; or

(b) Not both considered to be inoperable.

Events of this type indicate a condition where the NRC needs to consider taking action to ensure the condition is addressed at the reporting plant and/or other plants as appropriate. Interpretation of the new criterion is straightforward because the term "could have prevented the fulfillment of the safety function" has been used successfully for many years in connection with other reporting criteria. Based on conversations at the public meetings discussed above, the staff has concluded that the new criterion will be adequately clear. Also, the net effect of (1) removing the requirement to report a *condition outside the design basis of the plant* and (2) adding this new criterion will be fewer reports. The reports that are submitted will have a more direct safety nexus.

System Actuation

Under current rules, licensees are required to report actuation of "any engineered safety feature (ESF), including the reactor protection system (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 indicated that each plant should 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 includes a list of systems. However, the list has been modified as appropriate to address comments regarding specific items on the list. This list will provide consistent reporting for the listed systems, which are of high risk-significance. It is estimated to result in fewer reports because the cases where additional reports will be required are outweighed by the elimination of reports involving systems of lesser risk-significance.

In the future, as part of the effort to “risk-inform” 10 CFR Part 50, there may be an opportunity to develop plant-specific lists of systems of the most risk-significant systems in accordance with NRC-approved methods and criteria. At that time it will likely be appropriate to consider limiting the application of this and/or other reporting criteria to those systems.

Invalid Actuation

In the proposed rule we recommended eliminating telephone reporting under § 50.72 for invalid system actuations. We also recommended retaining the requirement for reporting of invalid 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 actuations.

After consideration of the comments, the final rule still requires reporting of invalid actuations under § 50.73. However, for this type of event the NRC needs less information than is required in a written Licensee Event Report (LER). Thus, in order to reduce the burden of reporting an invalid actuation, a licensee has the option of providing a telephone notification. This is far less burdensome than submitting an LER. In addition, the telephone notification may be made at any time within 60 days, because the information is not needed immediately.

Required Initial Reporting Times in § 50.72

In the proposed rule we recommended that declaration of an emergency class and deviation from the technical specifications under § 50.54(x) continue to be reportable within 1 hour. All other events reportable by telephone under § 50.72 would be reportable within 8 hours. It was recognized that there were concerns with the proposed approach, particularly with the 8-hour time limit. 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 and reconsideration of the NRC's need for information, the final rule requires 4-hour reporting, if not reported in 1 hour, for several types of events.

(1) For 3 kinds of unplanned transients, 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. They are:

(a) *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.

(b) *Initiation of a shutdown required by the plant's technical specifications.* Previously this was a 1-hour report.

(c) *A 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.

(2) For an *event or situation, related to the health and safety of the public or onsite 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,* there may be a need for the NRC to respond to heightened public concern. This requirement is unchanged from the current rules.

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.

(1) *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.

(2) *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.

(3). *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* (i.e., notification of unusual event, or higher). This is reportable within 1 hour after the declaration. Releases for which *a news release is planned or notification to another government agency has been or will be made* are reportable within 4 hours.

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:

(1) *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.*

(2) *A valid actuation of any of the systems specified in the rule, except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.*

(3) *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.*

(4) *Transport of a radioactively contaminated person to an offsite medical facility.*

(5) *A major loss of emergency assessment capability, offsite response capability, or offsite communications capability*.

<u>RELATED PROGRAMS</u>:

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 are consistent with the oversight process.

The final rule changes reporting requirements in §§ 50.72, 50.73, and 72.216. Similar requirements exist elsewhere in 10 CFR Parts 72 and 73. In SECY-99-181, dated July 9, 1999, and as approved by the Commission SRM dated August 13, 1999, the staff acknowledged that the reporting requirements in 10 CFR Parts 72 and 73 should be evaluated to determine whether a conforming rule change was necessary. Consistent with SECY-99-181, the staff will provide a rulemaking plan to the Commission for changes to the reporting requirements in 10 CFR Parts 72 and 73, or a Commission paper explaining why staff thinks that a rulemaking plan is not necessary, within 5 months after the Part 50 rule change is completed.

In addition, one of the comment letters recommended making conforming changes to reporting requirements in 10 CFR Part 76. As discussed in the *Federal Register* notice in response to Comment V, the staff plans to include 10 CFR Part 76 in the above evaluation.

<u>RESOURCES</u>:

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.

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. As indicated in Attachment 4, the Committee subsequently decided not to comment.

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); and

(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 final rule will be published approximately 2 weeks after OMB approval is received.

(b) The final rule will be published in a *Federal Register* notice (Attachment 1). Copies will be sent to reactor and ISFSI licensees, State Liaison Officers, and those who commented on the proposed rule.

(c) The Regulatory Analysis (Attachment 2) will be made available in the Public Document Room.

(d) Regulatory guidance (Attachment 3) will be published concurrently with publication of the final rule. The *Federal Register* notice that publishes the final rule will provide notice of the availability of the regulatory guidance.

(e) 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.

(f) A press release will be issued.

(g) The appropriate Congressional committees will be informed.

(h) 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.

/RA by Frank Miraglia Acting For/

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 Memorandum

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Package Accession No. ML003699529
SECY Paper Accession No. ML003699301
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Attachment 1

Federal Register Notice

[7590-01-P]

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 50 and 72

RIN 3150-AF98

Reporting Requirements for Nuclear Power Reactors and Independent Spent Fuel Storage Installations at Power Reactor Sites

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending the event reporting requirements for nuclear power reactors to reduce or eliminate the unnecessary reporting burden associated with events of little or no safety significance. This final rule continues to provide the Commission with reporting of significant events where Commission action may be needed to maintain or improve reactor safety or to respond to heightened public concern. This final rule also better aligns event reporting requirements with the type of information NRC needs to carry out its safety mission, including revising reporting requirements based on importance to risk and extending the required reporting times consistent with the time that information is needed for prompt NRC action. Also, NUREG-1022, Revision 2, "Event Reporting Guidelines, 10 CFR 50.72 and 50.73," is being made available concurrently with the amendments.

DATES: The final rule is effective [INSERT DATE 90 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Documents related to this action are available for public inspection at the Commission's Public Document Room (PDR) located at the Gelman Building, 2120 L Street, NW, Washington, DC 20555. Documents created or received at the NRC after November 1, 1999 are also available electronically at the NRC's Public Electronic Reading Room on the Internet at http://www.nrc.gov/NRC/ADAMS/index.html. From this site, the public can gain entry into the NRC's Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents. For further information contact the PDR Reference staff at 1-800-397-4209, 202-634-3273 or by email to pdr@nrc.gov.

FOR FURTHER INFORMATION CONTACT: Dennis P. Allison, Office of Nuclear Reactor Regulation, Washington, DC 20555-0001, telephone (301) 415-1178, e-mail dpa@nrc.gov.

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I. BACKGROUND

The reporting requirements in Sections 50.72 and 50.73 have been in effect, with minor modifications, since 1983. Experience has shown a need for change in several areas. On July 23, 1998 (63 FR 39522), the NRC published in the *Federal Register* an advance notice of proposed rulemaking (ANPR) to announce a contemplated rulemaking that would modify reporting requirements for nuclear power reactors. 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 (64 FR 36291), including a conforming change to Section 72.216. Concurrently, a draft revision to the associated event reporting guidelines was made available for public comment (NUREG-1022, Draft Revision 2). 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. Additional public meetings were held on February 25, and March 22, 2000, to discuss public comments.

II. ANALYSIS OF COMMENTS

The comment period for the proposed rule expired September 20, 1999. Twenty-seven comment letters were received, representing comments from 24 nuclear power plant licensees (utilities), two organizations of utilities, and one State agency.

In addition to the written comments received, the proposed rule was the subject of a public meeting on August 3, 1999, as discussed above under the heading "Background," and comments made at that meeting have also been considered.

Most commenters expressed support for amending the rules in accordance with the objectives discussed in the proposed rule. However, they objected to some of the specific provisions. Many comments also provided specific recommendations for changes to the proposed rules. The resolution of comments is summarized below. This summary addresses the principal comments (i.e., comments other than those that are: minor or editorial in nature; supportive of the approach described in the proposed rules; or applicable to another area or activity outside the scope of sections 50.72 and 50.73).

Comment A (Do not require reporting of degraded components): The proposed rule included a new component reporting criterion. It would have required reporting "Any event or condition that resulted in a component being in a degraded or non-conforming condition such that the ability of the component to perform its specified safety function is significantly degraded and the condition could reasonably be expected to affect other similar components in the plant." The term "significantly degraded" was defined by providing several examples of reportable and non-reportable events. The stated purpose was to ensure that design basis or other discrepancies would continue to be reported if the capability to perform a specified safety function is significantly degraded and the condition has generic implications.

Most commenters strongly objected to the proposed component reporting criterion. Among other things, they indicated:

(1) The proposed component reporting criterion is not needed because, after deleting the requirement to report a condition that is outside the design basis of the plant, any significant events would still be captured by the other existing criteria.

(2) The proposed component reporting criterion would be unclear and subject to widely varying interpretation with regard to the meaning of the term "significantly degraded" and the term "could reasonably be expected to apply to other similar components."

(3) The proposed component reporting criterion would be overly burdensome. For example, it would become necessary to screen all single component failures for reportability.

(4) The proposed component reporting criterion would be contrary to the stated objectives of the rulemaking. For example, it would result in many additional reports for events with little or no safety- or risk-significance.

Response: In the final rule, the proposed reporting criterion has been retained, but modified to address the concerns about unnecessary burden and clarity expressed in the comments. It requires reporting any event or condition that as a result of a single cause could have prevented the fulfillment of a safety function for two or more trains or channels in different systems that are needed to:

(1) Shut down the reactor and maintain it in a safe shutdown condition;

(2) Remove residual heat;

(3) Control the release of radioactive material; or

(4) Mitigate the consequences of an accident.

Events covered by this criterion may include cases of procedural error, equipment failure, and/or discovery of a design, analysis, fabrication, construction, and/or procedural inadequacy. However, licensees are not required to report an event pursuant to this criterion if the event results from:

(1) A shared dependency among trains or channels that is a natural or expected consequence of the approved plant design; or

(2) Normal and expected wear or degradation.

Subject to the two exclusions stated above, this criterion, as modified, is needed to capture those events with enough generic significance that a single cause could have prevented the fulfillment of the safety function of multiple trains or channels, but the event:

(1) Would not be captured by §§ 50.73(a)(2)(v) and 50.72(b)(3)(v) [event or condition that could have prevented fulfillment of the safety function of structures and systems needed to ...] because the affected trains or channels are in different systems; and

(2) Would not be captured by § 50.73(a)(2)(vii) [common cause inoperability of independent trains or channels] because the affected trains or channels are either:

(i) Not assumed to be independent in the plant's safety analysis; or

(i) Not both considered to be inoperable.

The criterion, as modified, would not be unclear because it uses the term "could have prevented fulfillment of the safety function," which is already used in a previously existing criterion.

The criterion, as modified, is not considered overly burdensome because it is estimated to result in fewer reports than the previous requirement to report a condition outside the design basis of the plant. It is not necessary to screen all single component failures for reportability.

The criterion, as modified, is considered consistent with the objectives of the rulemaking for the same reasons.

Comment B (Do not change the term "any engineered safety feature [ESF] ..."): In the proposed rule, the term "any engineered safety feature (ESF), including the reactor protection system (RPS)," which defines the systems for which actuation must be reported, would be replaced by a specific list of systems. It was recognized that this proposal to list the systems in the rule was controversial and public comment was specifically invited in this area. In particular, three principal alternatives to the proposed rule were identified for comment. They are:

Alternative 1, status quo. The rule would continue to require reporting for actuation of “any ESF.” The guidance would continue to infer that reporting should include the systems on a list which is similar to the list in the proposed rule.

Alternative 2, plant-specific list. The rule would require that licensees develop a plant-specific, risk-informed list.

Alternative 3, pre-1998 practice. The rule would continue to require reporting actuation of “any ESF.” The guidance would indicate that this includes those systems identified as ESF’s in each plant's final safety analysis report (FSAR).

The comments may be summarized as follows:

(1) Most commenters objected to the proposed rule, which would replace the term "any

engineered safety feature (ESF), including the reactor protection system (RPS)" with a list of specific systems. The reasons cited by the commenters include the following:

(a) Providing an all-inclusive list of systems in the rules is inappropriate.

(b) Each facility's FSAR specifies equipment that is designated as ESF equipment.

(c) Plant-specific differences exist in the safety-related status of their systems.

(d) The risk-significance of a particular system can vary greatly between plants, due to a wide variety of design differences. An all-inclusive list would increase the burden for some plants whose equipment on the list was not ESF equipment or equipment with a suitably high risk-significance.

(e) There are a number of specific problems with the proposed list. Specific examples were provided.

(2) Most commenters recommended in favor of Alternative 3, returning to the pre-1998 practice of reporting actuation for only those systems that are designated as ESFs in each facility's FSAR. They stated that this option best meets the goal of clarity and simplicity.

(3) One commenter recommended in favor of Alternative 1 (status quo), where the reporting guidelines contain a list of systems similar to the list proposed for the rule. It stated that the facility's internal reporting procedures already reflect the current practice. Any benefit that might be obtained by returning to the pre-1998 practice would be so slight that it would not justify the cost of changing the procedures.

(4) Some commenters indicated that there are problems with the status quo that need to be solved. For example, the reporting guidelines should exclude reporting of reactor water cleanup system (RWCU) isolations that routinely occur during system restoration following maintenance outages, due to rapid pressurization following valve opening.

(5) Most commenters objected to Alternative 2 (developing a plant-specific, risk-informed list of systems). They stated that this would require a significant expenditure of

resources and it is unclear as to whether or how it would meet the NRC's needs better than Alternative 3 (returning to pre-1998 practice). They also noted that there is a separate initiative to "risk-inform" 10 CFR Part 50. This may result in development of plant-specific lists of systems based on risk significance. However, the commenters do not believe the necessary criteria have been adequately established to make that shift as part of this rulemaking to modify 10 CFR 50.72 and 50.73. They recommended that later, as part of the rule change to "risk-inform" Part 50, the NRC should evaluate whether or not it is appropriate to "risk-inform" ESF systems subject to the event reporting requirements of 10 CFR 50.72 and 50.73.

Response: (1) The NRC believes providing a list of systems is the best approach because it will obtain consistent reporting of events that result in actuation of highly risk-significant systems. Consistent reporting for such events is needed to support estimating equipment reliability parameters and is important to several aspects of the NRC's general move towards more risk-informed regulation.

Commenters stated that the risk-significance of the systems varies depending on plant design. As discussed below under the headings "(e)(i)" through "(e)(vii)," a number of items have been removed from the list based on specific comments. The NRC believes that these systems remaining on the list are of sufficient risk significance to warrant reporting of a system actuation. The principal reason for reporting an actuation of one of these systems is that it is indicative of an unplanned plant transient that the NRC needs to evaluate to determine if action is necessary to address a safety problem. In this context, the NRC's need to evaluate the event is independent of classification of the system. For example, a valid actuation of the auxiliary feedwater (AFW) system at a pressurized water reactor (PWR) means there was a transient that involved an abnormal plant parameter, such as low steam generator level, which initiated the actuation. This is the reason the NRC needs to evaluate the event, and it is independent of how the AFW system happens to be classified at the particular plant.

The classification of systems in the FSARs has evolved over the years. For example, in earlier PWR designs the auxiliary feedwater system was not considered to be an ESF, and this is reflected in early FSARs. Later, although the system's function and importance did not change, it came to be considered an ESF, and this is reflected in later FSARs. Since the function and importance is the same regardless of classification, it does not make sense to exclude reporting for actuation of the auxiliary feedwater system based on its classification in the FSAR.

Furthermore, this approach is estimated to result in a net reduction in the number of events reported under this criterion. Some licensees will make additional reports involving highly risk-significant systems. However, these additional reports will be outweighed by the elimination of reports involving systems with lesser risk-significance.

(a) Commenters indicated that providing an all-inclusive list of systems in the rules is inappropriate. However, the NRC does not believe the list is all inclusive. It contains only systems that are highly risk-significant and omits systems of lesser risk-significance, even if the systems of lesser risk-significance are designated as ESFs. The NRC also believes the list is appropriate because it provides consistent reporting of events that result in actuation of these highly risk-significant systems and, at the same time, a net reduction in reporting burden.

(b) Commenters stated that each facility's FSAR specifies equipment that is designated as ESF equipment. However, the NRC believes that those lists are not consistent or risk-informed. For example, at several plants, emergency diesel generators (EDGs), which are highly risk-significant, are not identified as ESFs. At several pressurized water reactors (PWRS), the AFW system which is highly risk-significant, is not identified as an ESF. At most

boiling water reactors (BWRs), the reactor core isolation cooling (RCIC) system, which is highly risk-significant, is not identified as an ESF. On the other hand, most plants identify systems with lesser risk-significance, such as fuel building ventilation and filtration systems, as ESFs.

(c) Commenters stated that plant-specific differences exist in the safety-related status of systems. However, the NRC does not believe that this fact bears directly on the question of which system actuations should be reported. There is no need to report the actuation of all safety related systems, and there is no reason to exclude reporting for the actuation of a non-safety-related system if it is highly risk-significant simply on the basis that it has not been classified by the licensee as an ESF.

(d) Commenters stated that the risk-significance of a particular system can vary greatly among plants. They further stated that an all-inclusive list would therefore increase the burden for some plants whose equipment on the list was not ESF equipment or equipment with a suitably high risk-significance. The NRC agrees with the general statement that the risk-significance of a particular system can vary greatly among plants. However, the systems on the list are virtually always of high risk-significance. While it is true that, as a result of the list, some licensees will make additional reports, any additional reports will involve systems that are highly risk-significant. Also, these additional reports will be outweighed by the elimination of reports involving systems with lesser risk-significance. Thus, the net effect is a reduction in reporting.

(e) Commenters provided several specific examples of items they considered to be problems with the list. These examples are:

(i) In the proposed rule, the feedwater coolant injection (FWCI) system was characterized as an example of an emergency core cooling system (ECCS). Commenters stated that FWCI systems are not considered to be ECCS. The NRC believes that clarification

is warranted. In the final rule, FWCI is not characterized as an ECCS. However, it is included as a separate item in the list.

(ii) The proposed rule would have required reporting actuations of the RCIC system. Commenters stated that RCIC is included in the improved Standard Technical Specifications (ISTS) because it meets criterion 4 of 10 CFR 50.36, based on its contribution to the reduction of overall plant risk. They further stated that RCIC is not credited in the plant's safety analysis. The NRC believes that RCIC is highly risk-significant and, therefore, it remains on the list in the final rule.

(iii) Commenters stated that non-reportable exceptions should be allowed for systems that are considered to be ESFs, yet have lower levels of risk significance (control room ventilation systems, reactor building ventilation systems, fuel building ventilation systems, auxiliary building ventilation systems, RWCU isolations during restoration from maintenance, etc.). The NRC agrees. The final rule eliminates unnecessary reporting for systems that are considered to be ESFs, yet have lower levels of risk significance. It also eliminates reporting for RWCU isolations during restoration from maintenance because they are routine and are of low risk and safety significance.

(iv) Commenters stated that the list inappropriately includes "associated support systems" for BWR Division 3 EDGs. The NRC agrees. In the final rule the term "associated support systems" has been eliminated for BWR Division 3 EDGs, and other EDGs as well.

(v) Commenters stated that the list inappropriately includes station blackout diesel generators (and black start gas turbines that serve a similar purpose) that are not safety related. The NRC agrees. The final rule does not require reporting for station blackout diesel generators (and black start gas turbines that serve a similar purpose).

(vi) Commenters stated that although the term "anticipated transient without scram (ATWS) mitigating systems" is clear to those licensees that have dedicated systems (i.e.

AMSAC), a great deal of confusion exists for those that have no dedicated system. Due to the lack of clarity, it could be interpreted that any system that might be used during an ATWS would fall into this category (i.e. feedwater systems, borating systems, control rods, etc.). Extensive clarification would be needed to eliminate this ambiguity. The NRC agrees that clarification is warranted. In the final rule this item has been eliminated. Reporting is not needed for actuations for a system such as AMSAC. The reports needed for other systems are captured by other items on the list.

(vii) Commenters stated that it is unclear as to whether the service water entry applies only to emergency service water systems (i.e., those that don't operate unless there is an accident) or also to the standby service water systems that only run to remove heat from the residual heat removal (RHR) heat exchangers. The NRC agrees. In the final rule this item has been clarified to indicate that reporting is required for emergency service water (ESW) systems that do not normally run and that serve as ultimate heat sinks. In addition, this item has been deleted from the list of systems for which telephone notification is required under section 50.72 because an ESW actuation by itself does not indicate the type of transient that the NRC needs to evaluate. However, ESW system actuations are reportable only under section 50.73 because the information is needed to support the NRC staff's equipment reliability estimates.

(2) As stated by commenters, Alternative 3 would provide clarity and simplicity. However, the NRC believes that adoption of the list of systems in the final rule also provides clarity and simplicity.

(3) Although one commenter recommended in favor of Alternative 1, the NRC believes that this alternative would invite variable interpretation. The event reporting guidelines would contain a list of systems, whereas the rule would require reporting the actuation of "any ESF."

(4) Some commenters stated that, under previous requirements it was necessary to report reactor water cleanup system isolations that routinely occur during system restoration following maintenance outages, due to rapid pressurization following valve opening. The list of systems eliminates these unneeded reports because it limits the reporting of containment isolation signals to those that affect multiple systems or multiple main steam isolation valves (MSIVs).

(5) As indicated in the comments, with respect to Alternative (2), the project to “risk-inform” 10 CFR Part 50 may, in the future, lead to development of plant-specific lists of systems based on importance to risk and, as part of that project, it may be appropriate to consider whether or not the applicability of this reporting criterion, as well as other reporting criteria, should be based on such lists. It is expected that at that time the criteria necessary for development of the list will have been adequately established.

Comment C (Eliminate reporting for historical events): The proposed rule would have eliminated the requirement for a telephone notification, under 10 CFR 50.72, for:

(1) "Any event, found while the reactor is shutdown, that, had it been found while the reactor was in operation, would have resulted in the nuclear power plant, including its principal safety barriers, being seriously degraded or being in an unanalyzed condition that significantly compromises plant safety," and

(2) "Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor and maintain it in a safe shutdown conditions; (B) remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident" if the condition no longer exists at the time of discovery.

The proposed rule would also have eliminated the requirement for a written licensee event report (LER), under 10 CFR 50.73, for:

(1) "Any operation or condition prohibited by the plant's Technical Specifications," if the condition has not existed within three years of the date of discovery, and

(2) "Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor ...; (B) remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident," if the condition has not existed within three years of the date of discovery.

With regard to 10 CFR 50.73, public comment was specifically invited on whether such historical events and conditions should be reported (rather than being excluded from reporting, as proposed). Public comment was also invited on whether the three year exclusion of such historical events and conditions should be extended to all written reports required by section 50.73(a) (rather than being limited to these two specific reporting criteria, as proposed).

Most commenters supported the revisions to 10 CFR 50.72 that eliminate reporting of historical events. They stated that no safety significance exists for 10 CFR 50.72 reporting of historical events.

Most commenters also supported: (1) the elimination of written LERs for historical events for the two cases proposed; (2) extending the exclusion to all written reports required under section 50.73(a); and (3) using two years as a cutoff point, rather than three years. They stated that two years encompasses one refueling cycle of operation. Significant effort can be expended searching back in history for historical events. Reporting historical events more than two years old provides a low safety benefit and unnecessarily increases the reporting burden. It was recognized that three years is consistent with the time period that performance indicators are tracked under the new oversight process. However, most commenters stated that no safety significance exists for 10 CFR 50.73 reporting of historical events which occurred more than two years ago.

Response: The final rule eliminates the requirement to provide a telephone notification or a written LER for a historical event for the reasons discussed above.

The cutoff date for reporting of historical events remains at 3 years, as was indicated in the proposed rule. The 3-year cutoff is necessary because the NRC staff tracks performance indicators for a period of 3 years, in order to include a refueling outage as well as an extended period of operations, which provides more stable performance indicators. The additional burden of searching back for 3 years to determine if a condition existed within three years of the date of discovery, instead of only 2 years, is minimal because this type of event is rarely identified. Thus, it is considered justified in order to provide better performance indicators.

Comment D (Time limits for reporting): The proposed rule would have continued to require reporting within one hour after occurrence for declaration of an Emergency Class, or for deviation from the plant's Technical Specifications authorized pursuant to 10 CFR 50.54(x). Reporting of other events that are reportable by telephone under 10 CFR 50.72 would be reportable within 8 hours after occurrence, rather than within 1 hour or 4 hours as was previously required. Submittal of written LERs would be required within 60 days after discovery, rather than within 30 days as previously required.

Public comment was specifically invited on the question of whether additional levels should be used to better correspond to particular types of events. For example, 10 CFR 50.72 previously required reporting within 4 hours for events that involve low levels of radioactive releases, and events related to safety or environmental protection that involve a press release or notification of another government agency. These types of events could be maintained at 4 hours so that information is available on a more timely basis to respond to heightened public concern about such events. In another example, events related to environmental protection are sometimes reportable to another agency, which is the lead agency for the matter, with a different time limit, such as 12 hours. These types of events could be reported to the NRC at approximately the same time as they are reported to the other agency

Most comments on the proposed rule supported the proposal to use just three basic levels of required reporting times in 10 CFR 50.72 and 10 CFR 50.73 (1 hour, 8 hours, and 60 days), as indicated in the proposed rule, in the interest of simplicity. They indicated that additional levels of reporting are not needed. They also agreed with the revised reporting times based on importance to risk and extending the required reporting times consistent with the need for prompt NRC action. Additionally, they noted that the increased time for submittal of LERs will allow for completion of required engineering evaluations after event discovery, provide for more complete and accurate LERs, and result in fewer LER revisions and supplemental reports.

One comment letter, from the State of North Carolina, recommended maintaining the required reporting time at 4 hours for:

(1) Any airborne radioactive release that, when averaged over a time period of 1 hour, results in concentrations in an unrestricted area that exceed 20 times the applicable concentration specified in Appendix B to Part 20, Table 2, Column 1;

(2) Any liquid effluent release that, when averaged over a time of 1 hour, exceeds 20 times the applicable concentration 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;

(3) Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment; and

(4) Any event or situation, related to the health and safety of the public or onsite 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 onsite fatality or inadvertent release of radioactively contaminated materials.

The letter indicated that the information from such events are of interest to the public and public officials. Furthermore, the State's Division of Radiation Protection (DRP) provides independent advice to State decision-makers as part of its emergency preparedness function. Any delay in providing the information to the DRP may prevent or delay decisions on public health or public announcements. State agencies may be able to get the information from licensees, even under the proposed rule. However, this can be difficult to do when an incident is actually occurring unless the NRC's rules mandate the reporting within a prompt and well-defined period of time.

Similar comments were received from the State of Illinois regarding the ANPR.

Response: After consideration of the comments, and the potential need for NRC action, the final rule employs four basic levels of required reporting times in 10 CFR 50.72 and 10 CFR 50.73 (1 hour, 4 hours, 8 hours, and 60 days). Although this is not as simple as using just three levels, as was indicated in the proposed rule, it allows more flexibility in matching the required reporting time to the potential need for NRC action.

The final rule requires 4-hour reporting, if the event was not reported in 1 hour, for an event or situation, related to the health and safety of the public or onsite 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 onsite fatality or inadvertent release of radioactively contaminated materials. This is the same as previously required. These reports are needed promptly because they involve events where there may be a need for the NRC to respond to heightened public concern.

The final rule also requires 4-hour reporting, if the event was not reported in 1 hour, for unplanned transients. 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) An event that resulted or should have resulted in ECCS discharge into the reactor coolant system (RCS) as a result of a valid signal, except when it results from and is part of a pre-planned sequence during testing or operation. Previously this was a 1-hour report.

(b) Initiation of a shutdown required by the plant's Technical Specifications. Previously this was a 1-hour report.

(c) A reactor scram or reactor trip when the reactor is 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. In summary, they are:

(a) 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.

(b) 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.

(c) 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:

(a) 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.

(b) A valid actuation of any system listed in paragraph (b)(3)(iv)(B), except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.

(c) 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.

(d) Transport of a radioactively contaminated person to an offsite medical facility.

(e) A major loss of emergency assessment capability, offsite response capability, or offsite communications capability.

Comment E (Eliminate <u>all</u> reporting of invalid ESF actuations): The proposed rule would have eliminated the requirement for a <u>telephone notification</u>, under 10 CFR 50.72, for an ESF actuation if it is an invalid automatic actuation or an unintentional manual actuation. It was stated that invalid actuations are generally less significant than valid actuations because they do not involve plant conditions (e.g., low reactor coolant system pressure) that would warrant system actuation. Instead, they result from other causes (such as a dropped electrical lead during testing).

The proposed rule would not have eliminated the requirement for a written LER for such events. It was stated that there is still a need for reporting, because the reports are used in making estimates of equipment reliability parameters, which in turn are needed to support the Commission's move towards risk-informed regulation.

Most commenters indicated that invalid ESF actuations should not be reported under 10 CFR 50.73 unless the actuation impacts the plant such that other reporting criteria are independently met. They stated that contrary to the NRC’s expectations, reporting of invalid actuations will not provide the information needed to estimate equipment reliability parameters. This information should be collected by other less burdensome mechanisms, such as the Equipment Performance and Information Exchange (EPIX) system and Maintenance Rule reports.

Response: The NRC disagrees with many of the comments. Invalid actuations do provide information needed in estimating equipment reliability because they constitute unplanned demands. The response to unplanned demands may or may not differ significantly from those of planned test demands. Thus, in making reliability estimates, the results from unplanned demands are compared against those from planned test demands to determine whether or not it is appropriate to combine them. As indicated in the Commission Paper SECY-97-101, May 7, 1997, “Proposed Rule, 10 CFR 50.76, Reporting Reliability and Availability Information for Risk-significant Systems and Equipment,” Attachment 3, this is one of the categories of information that the NRC relies upon in order to make equipment reliability estimates.

As also discussed in SECY-97-101, EPIX is a voluntary program which does not provide a break out of invalid actuations and their results. The fact that ESF actuations are reported in written LERs was one of the key factors in making the determination that the NRC could work around weaknesses in the EPIX data in order to develop reliability estimates.

Reports developed under the maintenance rule, 10 CFR 50.65, are not submitted to the NRC.

Regardless, the Commission agrees that a reduction in unnecessary burden is warranted. Accordingly, the final rule takes the following approach:

(a) The requirement to provide a telephone notification under §50.72 for an invalid ESF actuation is eliminated, as was indicated in the proposed rule.

(b) 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 this case, the telephone notification has the same due date as the LER would have (60 days) because the information is not needed immediately.

Comment F (Eliminate reporting of high pressure coolant injection (HPCI) inoperability): As indicated in the 1983 Statements of Considerations for 10 CFR 50.72 and 50.73, failure or inoperability of a single train system, such as the HPCI system in BWRs, is considered to constitute an "event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor ...; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident."

Most commenters indicated that inoperability of HPCI does not of itself constitute a condition that would prevent the fulfillment of a safety function. Therefore, there is no benefit in reporting of HPCI inoperability <u>if</u> it has no affect on the ability to fulfill a safety function. BWR design considers HPCI inoperability and provides supporting systems such as reactor core isolation cooling (RCIC), Core Spray, and automatic depressurization system (ADS). This is supported by the relatively long Allowed Outage Time for HPCI in the Standard Technical Specifications (i.e., 14 days). If, in the event of HPCI inoperability, it can be shown that these systems are available and capable of fulfilling the safety function without HPCI, the event should not be reportable. Reporting HPCI inoperability in these cases has no meaning for event reporting and appears to be solely a data gathering exercise.

Additionally, the reactor oversight process uses a performance indicator for Safety System Functional Failures based on 10 CFR 50.73 reports. These indicators count failures of single train systems (such as HPCI), assuming that the event report documents a safety system failure. Reporting HPCI inoperability when there is no impact on the overall capability to fulfill the safety function (e.g., remove residual heat) will result in an overly conservative and detrimental assessment of this indicator.

Response: As indicated in the 1983 Statements of Considerations for 10 CFR 50.72 and 50.73, the purpose of this reporting criterion is to capture failure, inoperability, etc. on the basis of a structure or system. Thus, if an event or condition could have prevented fulfillment of the safety function of a system (i.e., by that system), it is reportable even if other system(s) could have performed the same safety function(s).

Also, in its assessment of plant performance, the NRC uses a performance indicator that includes failure or inoperability of single train systems such as HPCI. Thus, elimination of the requirement to report such events would be contrary to one of the objectives of the rulemaking - to maintain consistency with the NRC's actions to improve integrated plant performance.

Comment G (Allow 8 hours <u>after discovery</u> for telephone reporting): Section 50.72(b)(3) states "... the licensee shall notify the NRC as soon as practical and in all cases, within eight hours of the occurrence of any of the following: ....." The comment letter states that this should be revised to say "... the licensee shall notify the NRC as soon as practical and in all cases, within eight hours of the occurrence <u>or discovery</u> of any of the following: ...." The addition of the term "or discovery" provides for those events that are discovered to have occurred in the past, remained undetected for sometime, and presently exist.

Response: The NRC disagrees. Addition of the term "or discovery," as suggested by the comment, is not necessary. As they have in the past, the reporting guidelines address those limited cases, such as discovery of an existing but previously unrecognized condition, where it may be necessary to undertake an evaluation in order to determine if an event or condition is reportable. In other cases, where telephone reporting is required, the event should be reported as soon as practical and not later than the specified time limit.

Comment H (Eliminate telephone reporting for <u>non-critical</u> scrams): Most commenters recommended that telephone reporting of RPS actuation (reactor scrams) be limited to those occurring from a critical condition.

Response: The NRC partially disagrees. A valid scram, even from a subcritical condition, is indicative of an event with enough significance that the NRC should screen and/or review it on the day it occurs, rather than waiting for submittal of a written LER. However, telephone reporting under section 50.72 has been eliminated for invalid scrams from a subcritical condition.

Comment I (Limit reporting to conditions that <u>do</u> prevent fulfillment of a required function): Regarding section 50.72(b)(2)(v), which indicates that licensees shall report: "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: ...," this should be revised to read as follows: "Any event or condition that at the time of discovery <u>is preventing the ability to fulfill</u> the safety function of structures or systems that are needed to: ..."

This change is required to reflect the correct tense of the existence of an event or condition, rather than past speculation. Because of past confusion pertaining to the interpretation of this area, it is suggested that further discussion be included in the statements of consideration explaining that "is preventing" represents actual conditions and does not imply that further failures should be speculated.

Response: The NRC does not agree. The term "could have prevented" reflects the meaning of the rule. It means that, at the time of discovery, the condition could have prevented fulfillment of the function (for example, had there been a demand for the function). This includes but is not limited to the case where, at the time of discovery, the condition is actually preventing fulfillment of the function.

This Statement of Considerations and the reporting guidelines indicate that, in evaluating reportability under this criterion, it is not necessary to postulate an additional random single failure.

Comment J (Human performance data in LERs): Section 50.73(b)(2)(ix)(J) previously required that the narrative section of an LER include the following specific information as appropriate for the particular event:

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

(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 non-licensed operator, other utility personnel)."

The proposed amendment would have changed section 50.73(b)(2)(ii)(J) to simply state: "For each human performance related problem that contributed to the event, the licensee shall discuss the cause(s) and circumstances." It was stated that the current rule is more detailed than necessary. Details would continue to be provided in the reporting guidelines, as indicated in section 5.2.1 of the draft of Revision 2 to NUREG-1022.

Most commenters recommended that, instead of adopting the wording in the proposed rule, section 50.73(b)(2)(ii)(J) be revised to state: "For each root cause personnel error, the licensee shall discuss the cause(s) and circumstances." They stated that the shift from “personnel error” and the implied “root cause” to “human performance related problem” and “contributing factors” would greatly increase the scope of investigation and burden to the licensee. They also stated that it is only appropriate to require discussion of personnel error root causes.

Response: The intent of the proposed change was to clarify the requirements, not to expand them. Accordingly, the final rule states "For each human performance related root cause, the licensee shall discuss the cause(s) and circumstances." This limits the requirement to discussion of root causes of the event. It would not be appropriate, or consistent with the previous requirement discussed above, to limit the requirement to discussion of personnel error root causes, as opposed to procedural deficiency root causes, for example.

Comment K (Do not require additional availability data in LERs): Section 50.73(b)(3) requires that the assessment of safety consequences in an LER include the availability of systems or components that could have performed the same functions as systems or components that failed during the event. Proposed section 50.73(b)(3)(ii) would add a requirement that the assessment also include the availability of systems or components that: "Are included in emergency or operating procedures and could have been used to recover from the event in case of an additional failure in the systems actually used for recovery.”

Most commenters objected to this new provision, on the grounds that it adds significant burden without adding value. They stated that reporting should be based on existing plant conditions. Emergency operating procedures provide direction for use of many plant systems. If additional failures must be postulated, multiple systems would be required to be included in the LER for each safety function. There exists an infinite combination of failures that could be postulated. This unbounded requirement would result in a large amount of additional information that would be of minimal use. The assessment of the safety consequences and implications of the event would become cluttered with hypothetical additional failures and possible plant responses. Some commenters stated that the proposed requirement would require licensees to speculate on actions that could have been taken, and it would add significant burden with no added value.

Response: The purpose of the proposed change was to ensure that LERs contain sufficient information to support a risk assessment of the event. Usually there is enough information, or there is nearly enough information and the NRC staff can telephone the licensee to obtain any additional information needed. Section 50.73(b)(2)(6) requires that LERs include "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." Further, Section 50.73(c) provides that the NRC may require submittal of additional information if necessary for complete understanding of an unusually complex or significant event.

However, for those events that occur when the plant is shutdown, it has been difficult to obtain enough information because it cannot be assumed that equipment that is normally operable and available during operation is available during plant shutdown. Accordingly, in the final rule there is a requirement for additional availability information. To eliminate unnecessary burden, the requirement for additional availability data is limited to shutdown events. Also, it is revised to simply require providing the availability of systems needed to shut down the reactor and maintain safe shutdown conditions, remove residual heat, control the release of radioactive material, or mitigate an accident. This will eliminate potential difficulties in deciding what combinations of failures should be postulated for the purpose of deciding which systems to address.

Comment L (The rule should stand alone): Licensees must use both the rule and NUREG-1022, Rev. 2, to determine reportability of conditions. The rule should be a stand-alone document written simply enough to be understood without the need for a 100+ page guidance document.

Response: The NRC does not agree that it is necessary to eliminate the detailed event reporting guidelines and/or include a similar level of detail in the rule. Generally speaking, the rule language cannot be precise enough to cover all the situations that might be governed by the rule and require clarification. Furthermore, in response to the ANPR, most commenters expressed the need for timely guidance on the final rule. Finally, the NRC has reviewed the guidelines and modified them where necessary to ensure they are consistent with the final rule.   *Comment M (The terms "significant" and "serious" are not defined in the rule):* One commenter stated that the terms "significantly affects" and "seriously degraded" are not defined anywhere in the proposed rule.

Response: The NRC does not agree that it is necessary to define these terms in the rule. The term "unanalyzed condition that significantly affects plant safety," which was used in the proposed rule, is changed to "unanalyzed condition that significantly degrades plant safety" in the final rule, to make it clear that only matters with a negative effect on safety are reportable. Its meaning is defined by the same examples that have served since 1983 to define the term "unanalyzed condition that significantly compromises plant safety." These are: (1) multiple functionally related safety grade components out of service; (2) accumulation of voids that could inhibit the ability to adequately remove heat from the reactor core, particularly under natural circulation conditions; and (3) voiding in instrument lines that results in erroneous indication causing the operator to misunderstand the true condition of the plant. Also, two new examples have been added. They are: (1) discovery that a system required to meet the single failure criterion does not do so; and (2) discovery that the fire protection system does not protect at least one safe shutdown train in the event of fire in a given area. All of these examples are discussed in the Statement of Considerations for the final rule as well as the reporting guidelines.

The term "condition of the nuclear power plant, including its principal safety barriers, being seriously degraded" is defined by guidance that is very similar to the guidance which has defined it since 1983. Specifically, the guidance states that 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.

(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.

This guidance is discussed in further detail below under the heading "Principal safety barrier seriously degraded."

Comment N (False elevated sense of problems): In addition to the points discussed above under the heading "Comment E," some commenters stated that reporting of invalid actuations will convey a false elevated sense of problems to the general public, causing undue alarm for situations that actually represent little or no safety or risk significance. Therefore, the new rule should not require invalid actuations to be reported.

Response: The NRC does not agree that it is necessary to eliminate reporting for invalid actuations in order to avoid conveying a false elevated sense of problems to the general public. As discussed in the response to Comment E, there is a need for reporting of these events because they are used in making estimates of equipment reliability parameters, which in turn are needed to support the NRC's move towards risk-informed regulation. Invalid actuations have been reportable since 1983 under the previous rules, pursuant to both sections 50.72 and 50.73. No undue public alarm about such invalid actuations has been apparent to the NRC. The commenters did not identify any specific situation or provide any anecdotal evidence that reporting such invalid actuations has caused undue public alarm.

Comment O (Eliminate reporting of missing fire barriers): One commenter stated that the proposed rule notice at Page 36299, first column, the example pertaining to missing or degraded fire barriers basically equates such conditions with degraded principal safety barriers (i.e., fuel cladding, reactor coolant pressure boundary, and containment). This is inappropriate and should be deleted.

Response: The NRC does not agree. The example indicates that a condition is reportable, as an unanalyzed condition that significantly affects plant safety, "if fire barriers are found to be missing such that the required degree of separation for redundant safe shutdown trains is lacking." This would mean that, if a fire occurs in the given area, no safe shutdown trains would be protected to an acceptable degree. Because PRA studies continue to indicate that fire is a dominant contributor to risk, the inability to guarantee one train of safe shutdown capability, as required, is considered to be a condition that significantly degrades safety.

Comment P (Applicability of the backfit rule - no basis was stated): One commenter stated that in the proposed rule at Page 36303, Section VI., Backfit Analysis, the NRC stated that 10 CFR 50.109 does not apply without giving any basis for the claim.

Response: The discussion below, entitled Backfit Analysis, has been modified to provide the basis for the conclusion that 10 CFR 50.109 does not apply.

Comment Q (Modify "unanalyzed condition that significantly affects safety"): Most commenters stated that in section 50.72(b)(2)(ii)(B), the phrase "significantly affects plant safety" has no positive or negative connotation. Reword the section to read, "The nuclear power plant being in an unanalyzed condition that significantly degrades plant safety."

Response: The NRC agrees. The phrase is revised as recommended for the reason stated.

Comment R (Recognize risk-significance factors): One commenter stated that Section 50.73(a)(1) fails to recognize any risk significance factors.

Response: The NRC does not agree. Section 50.73(a)(1) is general in nature and indicates that, unless otherwise specified in section 50.73, the licensee shall report an event if it occurred within the last three years regardless of the plant mode or power level, and regardless of the significance of the structure, system, or component that initiated the event. Risk factors <u>are</u> recognized elsewhere in section 50.73. For example, the requirement to report an event or condition that could have prevented fulfillment of the safety function of structures or systems is limited to those structures or systems that are needed to perform specific safety functions. The list of systems for which actuation must be reported is based on risk-significance. Lack of significance is the reason for the elimination of reporting for late surveillance tests where the equipment, when tested, is functional. It is also the basis for eliminating several other requirements, such as immediate notification under section 50.72 for many invalid actuations.

Comment S (Modify "operation or condition prohibited by TS"): Section 50.73(a)(2)(i)(B) should be revised to read, "Any operation or condition occurring within three years of the date of discovery which was prohibited by the plant's <u>CURRENT</u> Technical Specifications." This rewrite would direct plants that recently converted to Improved Standard Technical Specifications to apply the current requirements to the identified condition, rather than having to consider the previous requirements under old Technical Specifications which are no longer applicable.

Response: The NRC agrees. The issue involves the following scenario. A licensee discovers a historical operation or condition that was prohibited by the TS in effect at the time the operation or condition occurred. However, the prohibition has subsequently been removed from the TS. The event is not considered significant because subsequently the operation or condition was found to be acceptable and the Technical Specifications have been revised to permit it. Accordingly, the final rule eliminates the requirement to report such events.

Comment T (Reporting burden would not be decreased): In addition to the points discussed above under the heading "Comment A," one commenter disagreed with the NRC's assessment that the proposed rule would represent an overall decrease in burden. This disagreement was based on the following points:

(a) (Telephone notifications are less burdensome than written LERs): Although the proposed rule would have decreased the number of phone-in reports pursuant to 10 CFR 50.72, the commenter believes this burden is very small when compared with the burden of processing and submitting Licensee Event Reports (LERs) pursuant to 10 CFR 50.73.

(b) (Actuation of systems that are currently excluded systems would become reportable): In the proposed rule, systems that were excluded from reporting requirements via previous rulemaking because they represented little or no safety significance have been reinstated (e.g., Reactor Water Cleanup System). Such action will now lead to reporting all isolations, even those with no safety significance.

(c) (Systems not classified as ESF would be treated as ESF): Systems that are not classified as Engineered Safety Features (ESF) will now be treated as ESF (e.g., Reactor Core Isolation Cooling System).

(d) (Invalid actuations would be added to the reporting requirements): Invalid actuations are now included in the reporting requirements. The impact of this change is that the clarifications for what used to be reportable have been deleted. Therefore, the proposed rule would treat all isolations or movements of a component as reportable regardless of safety significance.

(e) (The requirements for human performance data would be increased): The scope of information requested for human performance events has substantially increased, going well beyond previous direct root cause to now include associated contributing factors.

Response: The NRC believes that reporting burden will be decreased for the reasons described in the regulatory analysis. With regard to the specific bases cited for this comment:

(a) The NRC agrees that a telephone notification is less burdensome than a written LER. However, this does not mean that the reporting burden would be increased, or maintained, unless there is some increase in the number of LERs required under the final rule. This is not the case.

(b) The NRC does not agree that the proposed rule would have made actuation of previously excluded systems reportable. The previously excluded systems are: (i) reactor water clean-up system; (ii) control room emergency ventilation system; (iii) reactor building ventilation system; (iv) fuel building ventilation system; or (v) auxiliary building ventilation system. None of these appeared on the proposed list of systems for which actuation would be reportable.

(c) The NRC believes that system actuations added by adoption of the proposed list of systems are outweighed by system actuations eliminated.

(d) The NRC does not agree that invalid actuations are being added to the reporting requirements, because they were already in the reporting requirements.

(e) See the response to Comment J.

Comment U (Incentive to disable safety systems): In addition to the points discussed above under the heading "Comment E," one commenter indicated that reporting of invalid system actuations provided an incentive to disable safety systems.

Response: The NRC does not agree that it is necessary to eliminate reporting for invalid actuations to avoid creating an incentive to disable safety systems during maintenance activities to avoid the possibility of reporting an inadvertent actuation.

As discussed in the response to Comment E, there is a need for reporting of these events because they are used in making estimates of equipment reliability parameters, which in turn are needed to support the NRC's move towards risk-informed regulation. Also, in the final rule, licensees are not required to provide an immediate notification under Section 50.72 for an invalid system actuation. Furthermore, in the final rule licensees have the option of providing a telephone notification within 60 days, rather than submitting a written LER, for an invalid system actuation. These changes provide a drastic reduction in the burden of reporting for invalid system actuations. This burden reduction mitigates against any incentive to disable safety systems during maintenance in order to avoid the possibility of reporting an invalid actuation.

Comment V (Amend 10 CFR 76.120(d)(2) to allow 60 days): One commenter noted that the NRC plans to consider the idea of expanding the 60-day deadline for written reports to other regulations. The commenter recommended amending 10 CFR 76.120(d)(2) to allow 60 days for written reports required under that regulation.

Response: The NRC continues to plan to evaluate the need for rulemaking to modify 10 CFR Parts 72 and 73, including the suggestion that 60 days be allowed for written reports required under 10 CFR 72.75 and 73.71. As part of that effort, the NRC will also consider the suggestion that 60 days be allowed for written reports required under 10 CFR 76.120(d)(2).

Comment W (Enforcement levels): Some commenters indicated that the proposed characterization of Enforcement Level III for failure to provide a required 1-hour or 8-hour non-emergency telephone notification is too harsh in most cases. They indicated that in most cases the information provided in these non-emergency notifications has low safety significance.

Response: As discussed further below under the heading "Enforcement," the philosophy of the Enforcement Policy changes is to base the significance of the reporting violation on its impact on the NRC’s ability to provide proper oversight of licensee activities. Accordingly, in some cases, Severity Level III is appropriate for failure to make a required telephone notification and in other cases it is not.

Comment X (LER format and content): One commenter recommended that the NRC reconsider a "check the box" approach. The commenter indicated that such an approach could be crafted to make LER data entry easier, more consistent, and less ambiguous, without making LERs more difficult for the general public to understand.

Response: The NRC does not believe it is feasible to adopt a "check the box" in the final rule because the proposed rule did not include a proposal along those lines and development of a sound system would take considerable time, delaying issuance of the final rule.

Comment Y (Coordinate with performance indicator efforts): One commenter suggested careful coordinated consideration among the NRC staff responsible for this rulemaking and those responsible for performance indicator efforts to ensure that reports submitted under 10 CFR 50.73(a)(2)(v) are not being misapplied.

Response: The NRC agrees and the suggested coordination has taken place, and will continue in the future as well. As a result, it is not expected that the NRC will misapply reports submitted under 10 CFR 50.73(a)(2)(v).

Comment Z: One commenter recommended that telephone notifications due within 8 hours should only be required when activation of the NRC emergency response organization is actually required.

Response: The NRC does not agree that this is a feasible approach because activation of the NRC's emergency response organization is not a simple function of the reporting criterion under which an event is considered to be reportable. For example, the emergency response organization is <u>sometimes</u> activated for events which, at the time of reporting, are considered to correspond to lower levels of Emergency Classes or non-emergency reporting criteria.

Comment AA (Do not include criteria for reporting degraded steam generator tubes): The Statement of Considerations for the proposed rule and the Draft Revision 2 to NUREG-1022 would indicate that steam generator tube degradation is considered serious, and thus reportable as a seriously degraded reactor coolant system boundary, if the tubing fails to meet specific performance criteria involving margin against burst and accident induced leakage rate. Most commenters proposed that this guidance be deleted. They stated that the position was based on a Draft Regulatory Guide (DG-1074, Steam Generator Tube Integrity) that has not been approved. Discussions between the industry and the NRC are being held to define the steam generator program and Technical Specification requirements. Some of the examples provided in the proposed section are contrary to agreements that have been made between the industry and the NRC staff. Recognizing that these agreements are still evolving, the proposed revisions to the rule(s) and NUREG-1022 must agree with the final positions on steam generator issues.

Response: The details have been removed from the Statement of Considerations. The details in the final Revision 2 to NUREG-1022 have been modified to reflect the NRC staff's current thinking. The guidance is consistent with the steam generator tube integrity performance criteria and reporting guidelines currently under discussion. This reporting is needed to permit the staff to determine if further inquiry or action might be needed before the plant is restarted.

The NRC does not agree that it is necessary to delay issuance of this reporting guidance pending staff endorsement of the NEI 97-06 initiative. The NUREG-1022 guidance merely provides reasonable examples of degraded steam generator tube conditions which the NRC needs to evaluate. If it is determined in the future that different detailed guidance is needed, it can be issued at that time.

III. DISCUSSION

1. Objectives

The purposes of sections 50.72 and 50.73 remain the same because the basic needs remain the same. The essential purpose of section 50.72 is " ... to provide the Commission with immediate reporting of ... significant events where immediate Commission action to protect the public health and safety may be required or where the Commission needs timely and accurate information to respond to heightened public concern." (48 FR 39039; August 29, 1983). Section 50.73 "... 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. The same information can be used for other analytic procedures that will aid in identifying accident precursors." (48 FR 33851; July 26, 1983).

The objectives of these final amendments are as follows:

(1) To better align the reporting requirements with the NRC's needs for information to carry out its safety mission. An example is extending the required initial reporting times for some events, consistent with the time at which the reports are needed for NRC action.

(2) To reduce unnecessary reporting burden, consistent with the NRC's needs. An example is eliminating the reporting of design and analysis defects and deviations with little or no risk- or safety-significance.

(3) To clarify the reporting requirements where needed. An example is clarifying the criteria for reporting design or analysis defects or deviations.

(4) Any changes should be consistent with NRC actions to improve integrated plant assessments. For example, reports that are needed in the assessment process should not be eliminated.

2. Section by Section Discussion of Final Amendments

General requirements and reportable events [section 50.72(a)(1) and section 50.73(a)(1)]. The term "if it occurred within 3 years of the date of discovery" is added to eliminate reporting for conditions that have not existed during the three years before discovery. Such a historical event has less significance, and assessing reportability for earlier times can consume considerable resources. For example, assume that a procedure is found to be unclear and, as a result, a question is raised as to whether the plant was ever operated in a prohibited condition. If operation in the prohibited condition is likely, the answer would be reasonably apparent based on the knowledge and experience of the plant's operators and/or a review of operating records for the past three years. The effort required to review all records older than three years in order to rule out the possibility is not warranted.

A sentence is added to indicate that for an invalid actuation 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 in lieu of submitting a written LER. For this type of event, a telephone notification will provide the information needed and impose less burden than an LER.

General requirements [section 50.72(a)(5)]. The requirement to inform the NRC of the type of report being made (i.e., Emergency Class declared, non-emergency 1-hour report, or non-emergency 8-hour report) is revised to refer to paragraph (a)(1) instead of referring to paragraph (a)(3) to correct a typographical error.

Required initial reporting times [sections 50.72(a)(5), (b)(1), (b)(2), and new section 50.72(b)(3); and sections 50.73(a)(1) and (d)]. In the final amendments, declaration of an Emergency Class continues to be reported immediately after notification of appropriate State or local agencies and not later than 1-hour after declaration. This includes declaration of an Unusual Event, the lowest Emergency Class.

Deviations from Technical Specifications authorized pursuant to 10 CFR 50.54(x) continue to be reported as soon as practical and in all cases within 1 hour of occurrence. These two criteria capture those events where there may be a need for immediate action by the NRC to protect public health and safety.

The requirement to report an event or situation, related to the health and safety of the public or onsite personnel, or protection of the environment, for which a news release is planned or notification to other government agencies has been renumbered from section 50.72(b)(2)(vi) to section 50.72(b)(2)(xi). In other respects this reporting criterion is unchanged, and the event is reportable within 4 hours, if not reported within 1 hour. This provides the information at the time it may be needed to respond to heightened public concern.

The requirement to report 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 in section 50.72(b)(1)(iii) is deleted. Events of this type are captured by declaration of an Emergency Class, which is reportable within 1 hour.

The requirement to report 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 in section 50.72(b)(1)(vi) is deleted. Events of this type are captured by declaration of an Emergency Class, which is reportable within 1 hour.

The requirement to report an airborne radioactive release or liquid effluent release that exceeds specific limits in section 50.72 (b)(2)(iv) is deleted. 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 news release or notification to other government agencies are reportable within 1 hour after the release or notification.

The remaining non-emergency events that are reportable by telephone under 10 CFR 50.72 are reportable as soon as practical and in all cases within 4 hours or 8 hours (instead of within 1 hour or 4 hours as was previously required). This reduces the unnecessary burden of rapid reporting, while:

(1) Capturing, within 4 hours, those 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.

(2) Capturing, within 8 hours, those 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.

See the response to Comment D, above, for further discussion.

Written LERs are due within 60 days after discovery of a reportable event or condition (instead of within 30 days as was previously required). Changing the time limit from 30 days to 60 days 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 safety significance of the issue. However, for those cases where it does take longer than thirty days to complete a root cause analysis, this change will result in fewer LERs that require amendment (by submittal of an amended report).

The term "within 30 days of the discovery of a reportable event or situation" is deleted from section 50.73(d). This provision is redundant to the provisions of section 50.73(a)(1), which requires that a licensee submit an LER within 60 days after discovery of an event described in section 50.73(a). Retaining the time limit, which is now 60 days, in section 50.73(d) would create a conflict with sections 20.2201 and 20.2203 which require licensees to submit LERs for the events described in those sections within 30 days and in accordance with section 50.73(d).

Operation or condition prohibited by technical specifications [section 50.73(a)(2)(i)(B)]. This criterion is modified to eliminate reporting if the Technical Specification is administrative in nature. Violations of administrative Technical Specifications have generally not been considered to warrant submittal of an LER, and since 1983 when the LER rule was issued the NRC's event reporting guidelines have excluded almost all cases of such reporting. This change makes the plain wording of the rule consistent with that guidance.

Also, this criterion is modified to eliminate reporting if the event consisted 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 functional. This type of event has not proven to be significant because the equipment remained functional.

Finally, this criterion is modified to eliminate reporting of an operation or condition that occurred in the past and was prohibited at that time if, prior to discovery of the event, 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, by the time of discovery, the operation or condition would have been determined to be acceptable and thus permissible under current Technical Specifications.

The NRC expects licensees to include violations of the Technical Specifications in their corrective action programs, which are subject to NRC audit.

Condition of the nuclear power plant, including its principal safety barriers, being seriously degraded [former sections 50.72(b)(1)(ii) and (b)(2)(i), replaced by new section 50.72(b)(3)(ii)(A); and section 50.73(a)(2)(ii), renumbered to 50.73(a)(2)(ii)(A)]. Previously, 10 CFR 50.72(b)(1)(ii) and (b)(2)(i) provided the following distinction. During operation, a seriously degraded plant, including its principal safety barriers, was reportable within one hour. An event discovered while shutdown that had it been discovered during operation would have resulted in a seriously degraded plant, including its principal safety barriers, was reportable within 4 hours. The new 10 CFR 50.72(b)(3)(ii)(A) eliminates the distinction because there are no longer separate 1-hour and 4-hour categories of non-emergency reports for this criterion. There are only 8-hour non-emergency reports for this criterion.

Unanalyzed condition that significantly degrades plant safety [sections 50.72(b)(1)(ii)(A) and (b)(2)(i), replaced by new section 50.72(b)(3)(ii)(B); and section 50.73(a)(2)(ii)(A), renumbered to 50.73(a)(2)(ii)(B)]. Previously, 10 CFR 50.72(b)(1)(ii)(A) and (b)(2)(i) provided the following distinction. During operation, an unanalyzed condition that significantly compromised plant safety was reportable within 1 hour. An event discovered while shut down that had it been discovered during operation would have resulted in an unanalyzed condition that significantly compromised plant safety was reportable within 4 hours. The new 10 CFR 50.72(b)(2)(ii)(B) eliminates this distinction because there are no longer separate 1-hour and 4-hour categories of non-emergency reports for this reporting criterion. There are only 8-hour non-emergency reports for this criterion.

In addition, the new 10 CFR 50.72(b)(2)(ii)(B) and 50.73(a)(2)(ii)(B) refer to a condition that significantly degrades plant safety rather than a condition that significantly compromises plant safety. This is an editorial change intended to better reflect the nature of the criterion.

Condition that is outside the design basis of the plant [old section 50.72(b)(2)(ii)(B); and old section 50.73(a)(2)(ii)(B)]. This criterion is deleted. A condition outside the design basis of the plant is still required to be reported if it is significant enough to qualify under one or more of the following criteria.

<u>Plant safety significantly degraded</u>. If a condition outside the design basis of the plant (or any other unanalyzed condition) is significant enough that, as a result, plant safety is significantly degraded, the condition is reportable under sections 50.72(b)(2)(ii)(B) and 50.73(a)(2)(ii)(B) [i.e., an unanalyzed condition that significantly degrades plant safety].

As was previously 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 safety," (48 FR 39042; August 29, 1983 and 48 FR 33856, July 26, 1983).

"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," (48 FR 39042; August 29, 1983).

"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," (48 FR 39042; August 29, 1983 and 48 FR 33856, July 26, 1983).

"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," (48 FR 39042; August 29, 1983 and 48 FR 33856, July 26, 1983).

Furthermore, beyond the examples given in 1983, examples of reportable events 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 is reportable. 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 is not reportable.

<u>Structure or system not capable of performing its specified safety function</u>. If a design or analysis defect or deviation (or any other event or condition) is significant enough that, as a result, a structure or system is not capable of performing its specified safety functions, the condition is reportable under sections 50.72(b)(3)(v) and 50.73(a)(2)(v) [i.e., an 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 the consequences of an accident].

For example, in one case an annual inspection indicated that some bearings were wiped or cracked on both emergency diesel generators (EDGs). Although the EDGs were running prior to the inspection, the event was reportable because there was reasonable doubt about the ability of the EDGs to operate for an extended period of time, as required.

<u>Train inoperable longer than allowed</u>. If a design or analysis defect or deviation (or any other event or condition) is significant enough that, as a result, one train of a multiple train system controlled by the plant's TS is not capable of performing its specified safety functions for a period of time longer than allowed by the TS, the condition is reportable under section 50.73(a)(2)(i)(B) [i.e., an operation or condition prohibited by TS].

For example, if it is found that an exciter panel for one EDG lacks appropriate seismic restraints because of a design, analysis, or construction inadequacy and, as a result, there is reasonable doubt about the EDG's ability to perform its specified safety functions during and after a Safe Shutdown Earthquake (SSE), the event would be reportable.

Or, for example, if it is found that a loss of offsite power could cause a loss of instrument air and, as a result, there is reasonable doubt about the ability of one train of the auxiliary feedwater system to perform its specified safety functions for certain postulated steam line breaks, the event would be reportable.

<u>Principal safety barrier seriously degraded</u>. If a condition outside the design basis of the plant (or any other event or condition) is significant enough that, as a result, a principal safety barrier is seriously degraded, it is reportable under sections 50.72(b)(3)(ii)(A) and 50.73(a)(2)(ii)(A) [i.e., any event or condition that results in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded]. This reporting 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:

(i) 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.

(ii) 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."

(iii) Serious steam generator tube degradation.

(iv) 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).

(v) 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.[1]

Common cause inoperability of independent trains or channels. If a condition outside the design basis of the plant (or any other event or condition) is significant enough that, as a result, independent trains or channels become inoperable, it would be reportable under section 50.73(a)(2)(vii) [i.e., an event where a single cause or condition caused independent trains or channels to become inoperable]. For example, in one case it was found that independent circuit breakers, required to operate after a LOCA, were not qualified for the expected radiation levels (and were thus considered inoperable). In another example, a wiring error caused independent containment isolation valves to be incapable of properly closing (i.e., they would not close tightly because they would stop closing based on limit switch operation rather than torque).

Single Cause that Could Have Prevented Fulfillment of the Safety Functions of Trains or Channels in Different Systems. Finally, a condition outside the design basis of the plant (or any other event or condition) would be reportable if it is significant enough that, as a result of a single cause, it could have prevented the fulfillment of a safety function for two or more trains or channels in different systems that are needed to:

(1) Shut down the reactor and maintain it in a safe shutdown condition;

(2) Remove residual heat;

(3) Control the release of radioactive material; or

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[1] The LCO typically employs La, which is defined in Appendix J to 10 CFR Part 50 as the maximum allowable containment leak rate at pressure Pa, 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.

(4) Mitigate the consequences of an accident.

This new criterion is contained in sections 50.73(a)(2)(ix)(A) and (B), as discussed below.

Single Cause that Could Have Prevented Fulfillment of the Safety Functions of Trains or Channels in Different Systems. [new sections 50.73(a)(2)(ix)(a) and (B)]. This new criterion requires reporting any event or condition that as a result of a single cause could have prevented the fulfillment of a safety function for two or more trains or channels in different systems that are needed to:

(1) Shut down the reactor and maintain it in a safe shutdown condition;

(2) Remove residual heat;

(3) Control the release of radioactive material; or

(4) Mitigate the consequences of an accident.

Events covered by this new criterion may include cases of procedural error, equipment failure, and/or discovery of a design, analysis, fabrication, construction, and/or procedural inadequacy. However, licensees are not required to report an event pursuant to this criterion if the event results from:

(1) A shared dependency among trains or channels that is a natural or expected consequence of the approved plant design; or

(2) Normal and expected wear or degradation.

Subject to the two exclusions stated above, this criterion captures those events where a single cause could have prevented the fulfillment of the safety function of multiple trains or channels, but the event:

(1) Would not be captured by §§ 50.73(a)(2)(v) and 50.72(b)(3)(v) [event or condition that could have prevented fulfillment of the safety function of structures and systems needed to ...] because the affected trains or channels are in different systems; and

(2) Would not be captured by § 50.73(a)(2)(vii) [common cause inoperability of independent trains or channels] because the affected trains or channels are either:

(i) Not assumed to be independent in the plant's safety analysis; or

(ii) Not both considered to be inoperable.

This new criterion is closely related to §§ 50.73(a)(2)(v) and 50.72(b)(3)(v) [event or condition that could have prevented fulfillment of the safety function of structures and systems needed to: shut down the reactor and maintain it in a safe shutdown condition; remove residual heat; control the release of radioactive material; or mitigate the consequences of an accident]. Specifically:

The meaning of the term "could have prevented the fulfillment of the safety function" is essentially the same for this new criterion as it is for §§ 50.73(a)(2)(v) and 50.72(b)(3)(v) [i.e., there was a reasonable expectation of preventing the fulfillment of the safety function(s) involved]. However, in contrast to §§ 50.73(a)(2)(v) and 50.72(b)(3)(v), reporting under this new criterion applies to trains or channels in different systems. Thus, for this new criterion, the safety function that is affected may be different in different trains or channels.

In contrast to §§ 50.73(a)(2)(v) and 50.72(b)(3)(v), reporting under this new criterion applies only to a single cause. Also, in contrast to §§ 50.73(a)(2)(v) and 50.72(b)(3)(v), this new criterion does not apply to an event that results from a shared dependency among trains or channels that is a natural or expected consequence of the approved plant design. For example, this new criterion does not capture failure of a common electrical power supply that disables Train A of AFW and Train A of HPSI, because their shared dependency on the single power supply is a natural or expected consequence of the approved plant design.

Similar to §§ 50.73(a)(2)(v) and 50.72(b)(3)(v), this new criterion does not capture events or conditions that result from normal and expected wear or degradation. For example, consider pump bearing wear that is within the normal and expected range. In the case of two pumps in different systems, this new criterion categorically excludes normal and expected wear. In the case of two pumps in the same system, normal and expected wear should be adequately addressed by normal plant operating and maintenance practices and thus should not indicate a reasonable expectation of preventing fulfillment of the safety function of the system.

This criterion pertains only to written LERs required by 10 CFR 50.73. Telephone notifications are not required under this criterion.

It is estimated that the combination of removing the previous requirement to report a condition outside the design basis of the plant and adding this criterion will, on balance, result in fewer reports. In addition, the events reportable under this criterion are events that would likely have been considered reportable under the previous requirement to report a condition outside the design basis of the plant.

An example of an event that would be reportable under this criterion is as follows. During testing, two containment isolation valves failed to function as a result of improper air gaps in the solenoid operated valves that controlled the supply of instrument air to the containment isolation valves. The valves were powered from the same electrical division. Thus, § 50.73(a)(2)(vii) [common cause inoperability of independent trains or channels] would not apply. The two valves isolated fluid process lines in two different systems. Thus § 50.73(a)(2)(v) [condition that could have prevented fulfillment of the safety function of a structure or system] would apply only if engineering judgment indicates there was a reasonable expectation of preventing fulfillment of the safety function for redundant valves within the same system.[2] However, this new criterion would certainly apply if a single cause

[2] Or, alternatively, there was reasonable doubt that the safety function would have been fulfilled if the affected trains had been called upon to perform them.

(such as a design inadequacy) induced the improper air gaps, thus preventing fulfillment of the safety function of two trains or channels in different systems.

Another example of an event reportable under this criterion is as follows. A motor operated valve in one train of a system was found with a crack 75 percent through the stem. Although the valve stem did not fail, engineering evaluation indicated that further cracking would occur which could have prevented fulfillment of its safety function. As a result, the train was not considered capable of performing its specified safety function and the valve stem was replaced with a new one.

The root cause was determined to be environmentally assisted stress corrosion cracking which resulted from installation of an inadequate material some years earlier. The same inadequate material had been installed in a similar valve in a different system at the same time. The similar valve was exposed to similar environmental conditions as the first valve.

The condition is reportable under this new criterion if engineering judgment indicates that there was a reasonable expectation of preventing fulfillment of the safety function of both affected trains. This depends on details such as whether the second valve stem was also significantly degraded and, if not, whether any future degradation of the second valve stem would have been discovered and corrected, as a result of routine maintenance programs, before it could become problematic.

Additional examples may be found in event reporting guidelines in NUREG-1022, Revision 2.

Condition not covered by the plant's operating and emergency procedures [former section 50.72(b)(1)(ii)(C); and former section 50.73(a)(2)(ii)(C)]. This criterion is deleted because it does not result in worthwhile reports aside from those that are captured by other reporting criteria such as:

(1) An unanalyzed condition that significantly degrades plant safety;

(2) An 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 and maintain it in a safe shutdown condition; remove residual heat; control the release of radioactive material; or mitigate the consequences of an accident;

(3) An event or condition that results in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded;

(4) An operation or condition prohibited by the plant's TS;

(5) An event or condition that results in actuation of an ESF;

(6) An event 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 nuclear power plant.

External event that poses an actual threat or significantly hampers personnel [former section 50.72(b)(1)(iii), deleted; and section 50.73(a)(2)(iii)]. This criterion requires reporting 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. Section 50.72(b)(1)(iii) is deleted because it is redundant to section 50.72(a)(1)(i). That is, events of this type are captured by declaration of an Emergency Class, which is reportable within 1 hour. Section 50.73(a)(2)(iii) is retained in order to ensure submittal of an LER. This provision is not redundant because there is no criterion in section 50.73 that generally requires an LER for declaration of an Emergency Class.

System actuation [old sections 50.72(b)(1)(iv) and (b)(2)(ii), replaced by new sections 50.72(b)(2)(iv)(A), (b)(2)(iv)(B), and (b)(3)(iv); and section 50.73(a)(2)(iv)]. Previously, sections 50.72(b)(1)(iv) and (b)(2)(ii) provided the following distinction: an event that results or should have resulted in ECCS discharge into the reactor coolant system as a result of a valid signal was reportable within 1 hour; any other engineered safety feature (ESF) actuation, including reactor protection system (RPS) actuation, was reportable within 4 hours. The new 10 CFR 50.72(b)(2)(iv)(A) requires reporting an event that results or should have resulted in ECCS discharge into the reactor coolant system as a result of a valid signal within 4 hours. The new section 50.72(b)(2)(iv)(B) requires reporting a reactor scram during critical operation within 4 hours. The new section 50.72(b)(3)(iv) requires reporting other ESF actuations within 8 hours. See the response to Comment D, above, for further discussion.

The new section 50.72(b)(2)(iv) eliminates telephone reporting for invalid actuations, except for actuation of the RPS when the reactor is critical. These events are not significant and thus telephone reporting is not needed. The final amendments do not eliminate the requirement for reporting of an invalid actuation under 10 CFR 50.73. There is still a need for reporting of these events because they are used in making estimates of equipment reliability parameters, which in turn are needed to support the Commission's move towards risk-informed regulation. However, for an invalid actuation reported under section 50.73(a)(2)(iv), other than actuation of the RPS when the reactor is critical, section 50.73(a)(1) provides the option of making a telephone report to the NRC Operations Center within 60 days instead of submitting a written LER. The telephone report is far less burdensome. Sixty days is an appropriate time because the information is not needed immediately. (See the response to Comment E above for further discussion of this need.)

Previously, the rules generally required reporting the actuation of any ESF including the RPS. The final rule, instead, generally requires reporting for actuation of specific listed systems. These systems are:

(1) Reactor protection system (RPS) including: reactor scram or reactor trip.

(2) General containment isolation signals affecting containment isolation valves in more than one system or multiple main steam isolation valves (MSIVs).

(3) Emergency core cooling systems (ECCS) for pressurized water reactors (PWRs) including: high-head, intermediate-head, and low-head injection systems and the low pressure injection function of residual (decay) heat removal systems.

(4) ECCS for boiling water reactors (BWRs) including: high-pressure and low-pressure core spray systems; high-pressure coolant injection system; low pressure injection function of the residual heat removal system.

(5) BWR reactor core isolation cooling system; isolation condenser system; and feedwater coolant injection system.

(6) PWR auxiliary or emergency feedwater system.

(7) Containment heat removal and depressurization systems, including containment spray and fan cooler systems.

(8) Emergency ac electrical power systems, including: emergency diesel generators (EDGs); hydroelectric facilities used in lieu of EDGs at the Oconee Station; and BWR dedicated Division 3 EDGs.

(9) Emergency service water (ESW) systems that do not normally run and that serve as ultimate heat sinks. ESW system actuations are reportable under section 50.73 only.

This approach provides for consistent reporting of actuations for these highly risk-significant systems. At the same time, it eliminates reporting of actuations for systems of lesser risk-significance, such as actuation of ventilation systems that are considered to be ESFs.

Section 50.72 excludes reporting for an actuation that resulted from and was part of a pre-planned sequence during testing or reactor operation. It further excludes reporting of an invalid actuation, except for a reactor scram or reactor trip when the reactor is critical.

A valid actuation is one that results from either a "valid signal" or an intentional manual initiation. A "valid signal" is one that results from actual plant conditions or parameters satisfying the requirements for system actuation. An invalid actuation is one that does not meet the criteria for being valid.

Section 50.73 also excludes reporting for an actuation that resulted from and was part of a pre-planned sequence during testing or reactor operation. It further excludes reporting of an invalid actuation that occurred when the system was properly removed from service or an invalid actuation that occurred after the safety function had been already completed.

For those invalid actuations which <u>are</u> reportable under section 50.73, a licensee may provide a telephone notification within 60 days, rather than submitting an LER. This option to provide a telephone notification rather than an LER does not apply, however, to a reactor scram or reactor trip that occurs while the reactor is critical.

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 and maintain it in a safe shutdown condition; remove residual heat; control the release of radioactive material; or mitigate the consequences of an accident [former section 50.72(b)(2)(iii), replaced by new sections 50.72(b)(3)(v) and (b)(3)(vi); and sections 50.73(a)(2)(v) and (a)(2)(vi)]. The phrase "event or condition that alone could have prevented the fulfillment of the safety function of structures or systems ...." is clarified by deleting the word "alone". This clarifies the requirements by more clearly reflecting the principle that it is necessary to consider other existing plant conditions in determining the reportability of an event or condition under this criterion. For example, if one train of a two train system is incapable of performing its safety function for one reason, and the other train is incapable of performing its safety function for a different reason, the event is reportable.

The term "at the time of discovery" is added to section 50.72(b)(3)(v) to eliminate telephone notification for a condition that no longer exists or no longer has an effect on required safety functions. For example, it might be discovered that at some time in the past both trains of a two train system were incapable of performing their safety function, but the condition was subsequently corrected and no longer exists. In another example, while the plant is shutdown, it might be discovered that during a previous period of operation a system was incapable of performing its safety function, but the system is not currently required to be operable. These events are considered significant, and an LER is required, but there is no need for telephone notification.

A new paragraph, section 50.72(b)(3)(vi) is added to clarify section 50.72. The new paragraph explicitly states that telephone reporting is not required under section 50.72(b)(2)(v) for single failures if redundant equipment in the same system was operable and available to perform the required safety function. That is, although one train of a system may be incapable of performing its safety function, reporting is not required under this criterion if that system is still capable of performing the safety function. This is the same principle that was and continues to be stated explicitly in section 50.73(a)(2)(vi) with regard to written LERs.

Airborne radioactive release or liquid effluent release [former section 50.72(b)(2)(iv), deleted; and section 50.73(a)(2)(viii), retained; and former section 50.73(a)(2)(ix), deleted]. These criteria require reporting releases of radioactive material at a very low level because, for a power reactor, such a release would indicate a breakdown in the licensee's programs to control releases -- not because of the impact of such a release.

Section 50.72(b)(2)(iv) is deleted because immediate notification is not needed for releases at such a low level. Declaration of an Emergency Class, which occurs at a somewhat higher (but still low) level, captures releases that are large enough to warrant immediate notification. Declaration of an Emergency Class is reportable within 1 hour under section 50.72(a)(1)(i).

Section 50.73(a)(2)(viii) is retained in order to ensure submittal of an LER. Even if the release is very small, the NRC needs to review the event and consider whether action is needed to ensure the cause is addressed at other plants as appropriate. There is no criterion in section 50.73 that generally requires an LER for declaration of an Emergency Class.

Section 50.73(a)(2)(vix) is deleted because it is not correct. It indicated that reporting under section 50.73(a)(2)(viii) satisfied the requirements of section 20.2203(a)(3). However, some events captured by section 20.2203(a)(3) are not captured by section 50.73(a)(2)(viii).

Internal event that poses an actual threat or significantly hampers personnel [former section 50.72(b)(1)(vi), deleted; and section 50.73(a)(2)(x)]. This criterion requires reporting 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. Section 50.72(b)(1)(vi) is deleted because it is redundant to section 50.72(a)(1)(i). That is, events of this type are captured by declaration of an Emergency Class, which is reportable within 1 hour. Section 50.73(a)(2)(x) is retained in order to ensure submittal of an LER. This provision is not redundant because there is no criterion in section 50.73 that generally requires an LER for declaration of an Emergency Class.

Major loss of emergency assessment capability, offsite response capability, or communication capability [former section 50.72(b)(2)(v), replaced by new section 50.72(b)(3)(xii)]. The new section is modified by adding the word "offsite" in front of the term "communications capability" to make it clear that the requirement does not apply to internal plant communication systems.

Contents of LERs [section 50.73(b)(2)(ii)(F)]. Paragraph (F) is revised to correct the address of the NRC Library.

Spent fuel storage cask problems [former sections 50.72(b)(2)(vii) and 72.216(a)(1), (a)(2), (b) and (c)]. The provisions of section 50.72(b)(2)(vii) are deleted because these reporting criteria are redundant to the reporting criteria contained in sections 72.216(a)(1), (a)(2), and (b). Repetition of the same reporting criteria in different sections of the rules added unnecessary complexity and was inconsistent with the current practice in other areas, such as reporting of safeguards events as required by section 73.71.

Also, a conforming amendment is made to section 72.216(a), (b), and (c). This is necessary because section 72.216(a) previously relied on the provisions of section 50.72(b)(2)(vii), which are now deleted, to establish the time limit for initial notification. The amended section 72.216 refers to sections 72.74 and 72.75 for initial notification and followup reporting requirements.

Exemptions [section 50.73(f)]. The provisions of this section are deleted because the exemption provisions in section 50.12 provide for granting of exemptions when they are warranted. Including another, section-specific exemption provision in section 50.73 adds unnecessary complexity to the rules.

3. Revisions to Event Reporting Guidelines in NUREG-1022

A report, NUREG-1022, Revision 2, "Event Reporting Guidelines, 10 CFR 50.72 and 50.73," is being made available concurrently with the final amendments to 10 CFR 50.72 and 50.73. The report is available for inspection in the NRC Public Document Room or it may be viewed and downloaded electronically via the interactive rulemaking web site established by the NRC for this rulemaking, as discussed above under the heading ADDRESSES. Single copies may be obtained from the contact listed above under the heading "For Further Information Contact." In the report, guidance that is considered to be new or different in a meaningful way, relative to that provided in NUREG-1022, Revision 1, is indicated by underlining the appropriate text.

4. Reactor Oversight

The NRC is implementing revisions to the process for oversight of operating reactors, including inspection, assessment, and enforcement processes. In connection with this effort, the NRC has considered the kinds of event reports that would be eliminated by the final rules and concluded that the changes are consistent with the oversight process.

In connection with the proposed rule, public comment was invited on whether or not this is the case. In particular, it was requested that if any examples to the contrary are known they be identified. None were identified.

5. Enforcement

The NRC intends to modify its existing enforcement policy in connection with the final amendments to sections 50.72 and 50.73. The philosophy of the changes is to base the significance of the reporting violation on the impact on the NRC's ability to provide proper oversight of licensee activities. For example, a late report may impact the ability of the NRC to fulfill its obligations of fully understanding issues that are required to be reported in order to accomplish its public health and safety mission, which in many cases involves reacting to reportable issues or events. As such, the NRC intends to revise the Enforcement Policy, NUREG-1600[3] as follows:

(1) Appendix B, Supplement I.C--Examples of Severity Level III violations.

(a) Example 11 will be revised to read as follows--A failure to provide the required 1-hour telephone notification of an emergency action taken pursuant to 10 CFR 50.54(x).

(b) An additional example will be added that will read as follows--A failure to provide a

[3]The examples refer to those published in the November 9, 1999 revision to NUREG-1600.

required 1-hour, 4-hour or 8-hour non-emergency telephone notification pursuant to 10 CFR 50.72, that substantially impacts agency response.

(c) An additional example will be added that will read as follows--A late 4-hour or 8-hour notification that substantially impacts agency response.

(2) Appendix B, Supplement I.D--Examples of Severity Level IV violations.

(a) Example 4, will be revised to read as follows--A failure to provide a required 60-day written LER pursuant to 10 CFR 50.73.

These changes in the Enforcement Policy will be consistent with the overall objective of the rule change of better aligning the reporting requirements with the NRC's reporting needs. The Enforcement Policy changes will correlate the Severity Level of the infractions with the relative importance of the information needed by the NRC.

Section IV.A.3 of the Enforcement Policy provides that the Severity Level of an untimely report may be reduced depending on the individual circumstances. In deciding whether the Severity Level should be reduced for an untimely 1-hour, 4-hour, or 8-hour non-emergency report, the impact that the failure to report had on any agency response will be considered. For example, if a delayed 8-hour reportable event impacted the timing of a followup inspection that was deemed necessary, then the Severity Level will not normally be reduced. Similarly, a late notification that delayed the NRC's ability to perform an engineering analysis of a condition to determine if additional regulatory action was necessary will generally not be considered for disposition at a reduced Severity Level.

6. Electronic Reporting

The NRC is currently in the process of implementing an electronic document management and reporting program, known as the Agency Wide Document Access and

Management System (ADAMS) that will provide for electronic submittal of many types of reports, including LERs. Accordingly, no separate rulemaking effort to provide for electronic submittal of LERs is necessary.

7. State Input

Many States (Agreement States and Non-Agreement States) have agreements with power reactors to inform the States of plant issues. State reporting requirements are frequently triggered by NRC reporting requirements. Accordingly, the NRC sought State comment on issues related to the proposed amendments via letters to State Liaison Officers as well as by a specific request in the Federal Register notice on the proposed rule. Comments on the proposed rule were received from one State agency, as discussed above under the heading "Comment D."

8. Plain Language

The President's Memorandum dated June 1, 1998, entitled, "Plain Language in Government Writing," directed that the Federal Government's writing be in plain language. The NRC requested comments on the proposed rule specifically with respect to the clarity and effectiveness of the language used. A number of suggestions aimed at improving the clarity and effectiveness of the language used were received and incorporated into the final rule.

IV. ENVIRONMENTAL IMPACT: CATEGORICAL EXCLUSION

The NRC has determined that this proposed regulation is the type of action described in categorical exclusion 10 CFR 51.22(c)(3)(iii). Therefore, neither an environmental impact statement nor an environmental assessment has been prepared for this proposed regulation.

V. BACKFIT ANALYSIS

The NRC has determined that the backfit rule, 10 CFR 50.109, does not apply to information collection and reporting requirements such as those contained in the final rule because they do not impose backfits as defined in 10 CFR 50.109(a)(1). Therefore, a backfit analysis has not been prepared. However, as discussed below, the NRC has prepared a regulatory analysis for the proposed rule, which examines the costs and benefits of the proposed requirements in this rule. The Commission regards the regulatory analysis as a disciplined process for assessing information collection and reporting requirements to determine that the burden imposed is justified in light of the potential safety significance of the information to be collected.

VI. REGULATORY ANALYSIS

The NRC prepared a draft regulatory analysis for the proposed rule to examine the costs and benefits of the alternatives considered by the NRC, and public comments on this analysis were requested in connection with the proposed rule. As discussed above under the heading "Comment T," some commenters disagreed with the proposition that the rule would reduce reporting burden. These comments were addressed by incorporating changes into the final rule, such that the assumptions in the draft regulatory analysis are sustained, and no changes have been made to the regulatory analysis. The regulatory analysis is available for inspection in the NRC Public Document Room or it may be viewed and downloaded electronically via the interactive rulemaking web site established by NRC for this rulemaking, as discussed above under the heading ADDRESSES. Single copies may be obtained from the contact listed above under the heading "For Further Information Contact."

VII. PAPERWORK REDUCTION ACT STATEMENT

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). This rule has been reviewed and approved by the Office of Management and Budget, approval numbers 3150-0011 and 3150-0104.

The annual 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 nuclear power reactor, 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 proposed amendments would impose a one-time implementation burden of about 200 hours per reactor. The recurring annual information collection burden is estimated to be reduced by 200 hours per reactor.

Send comments on any aspect of this information collection, including suggestions for reducing this burden, to the Records Management Branch (T-6E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 or by Internet electronic mail to BJS1@NRC.GOV; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0011 AND 3150-0104); Office of Management and Budget, Washington, DC 20503.

Public Protection Notification

If a means used to impose 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, an information collection.

VIII. REGULATORY FLEXIBILITY ACT CERTIFICATION

In accordance with the Regulatory Flexibility Act (5 U.S.C. 605(b)), the Commission certifies that this rule does not have a significant economic impact on a substantial number of small entities. This proposed rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the size standards established by the NRC (10 CFR 2.810).

IX. SMALL BUSINESS REGULATORY ENFORCEMENT FAIRNESS ACT

In accordance with the Small Business Regulatory Enforcement Fairness Act of 1996, the NRC has determined that this action is not a major rule and has verified this determination with the Office of Information and Regulatory Affairs of OMB.

X. NATIONAL TECHNOLOGY TRANSFER AND ADVANCEMENT ACT

The National Technology Transfer and Advancement Act of 1995, Pub. L. 104-113, requires that Federal agencies use technical standards developed or adopted by voluntary consensus standards bodies unless the use of such a standard is inconsistent with applicable law or otherwise impractical. There are no consensus standards regarding the reporting of safety information by nuclear power plant licensees to regulatory authorities that would apply to the requirements imposed by this rule. Thus, the provisions of the Act do not apply to this rule.

XI. FINAL AMENDMENTS

List of Subjects

10 CFR Part 50

Antitrust, Classified information, Criminal penalties, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

10 CFR Part 72

Criminal penalties, Manpower training programs, Nuclear materials, Occupational safety and health, Reporting and recordkeeping requirements, Security measures, Spent fuel.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is adopting the following amendments to 10 CFR Part 50 and 10 CFR Part 72.

PART 50--DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 continues to read as follows:

Authority: Secs. 102, 103, 104, 105, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 938, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2132, 2133, 2134, 2135, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 50.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 50.10 also issued under secs. 101, 185, 68 Stat. 955 as amended (42 U.S.C. 2131, 2235), sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.13, 50.54(D.D.), and 50.103 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138). Sections 50.23, 50.35, 50.55, and 50.56 also issued under sec. 185, 68 Stat. 955 (42 U.S.C. 2235). Sections 50.33a, 50.55a and Appendix Q also issued under sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.34 and 50.54 also issued under sec. 204, 88 Stat. 1245 (42 U.S.C. 5844). Sections 50.58, 50.91, and 50.92 also issued under Pub. L. 97-415, 96 Stat. 2073 (42 U.S.C. 2239). Section 50.78 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Appendix F also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

2. Section 50.72 is amended by revising paragraphs (a) and (b) to read as follows:

§ 50.72 Immediate notification requirements for operating nuclear power reactors.

(a) General requirements.[1] (1) Each nuclear power reactor licensee licensed under § 50.21(b) or § 50.22 of this part shall notify the NRC Operations Center via the Emergency Notification System of:

(i) The declaration of any of the Emergency Classes specified in the licensee's approved Emergency Plan;[2] or

(ii) Those non-emergency events specified in paragraph (b) of this section that occurred within three years of the date of discovery.

(2) If the Emergency Notification System 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.[3]

(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 Emergency Classes.

(4) The licensee shall activate the Emergency Response Data System (ERDS)[4] 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.

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[1] 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, 72.216, and 73.71.

[2] These Emergency Classes are addressed in Appendix E of this part.

[3] Commercial telephone number of the NRC Operations Center is (301) 816-5100.

[4] Requirements for ERDS are addressed in Appendix E, Section VI.

(5) When making a report under paragraph (a)(1) of this section, the licensee shall identify:

(i) The Emergency Class declared; or

(ii) Paragraph (b)(1), "One-hour reports," paragraph (b)(2), "Four-hour reports," or paragraph (b)(3), "Eight-hour reports," as the paragraph of this section requiring notification of the non-emergency event.

(b) *Non-emergency events* -- (1) *One-hour reports.* If not reported as a declaration of an Emergency Class under paragraph (a) of this section, the licensee shall notify the NRC as soon as practical and in all cases within one hour of the occurrence of any deviation from the plant's Technical Specifications authorized pursuant to § 50.54(x) of this part.

(2) *Four-hour reports.* If not reported under paragraphs (a) or (b)(1) of this section, the licensee shall notify the NRC as soon as practical and in all cases, within four hours of the occurrence of any of the following:

(i) The initiation of any nuclear plant shutdown required by the plant's Technical Specifications.

(ii) -(iii) [Reserved]

(iv)(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 except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.

(B) Any event or condition that results in 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.

(v) - (x) [Reserved]

(xi) Any event or situation, related to the health and safety of the public or onsite 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 onsite fatality or inadvertent release of radioactively contaminated materials.

(3) *Eight-hour reports.* If not reported under paragraphs (a), (b)(1) or (b)(2) of this section, the licensee shall notify the NRC as soon as practical and in all cases within eight hours of the occurrence of any of the following:

(i) [Reserved]

(ii) Any event or condition that results in:

(A) The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or

(B) The nuclear power plant being in an unanalyzed condition that significantly degrades plant safety.

(iii) [Reserved]

(iv)(A) Any event or condition that results in valid actuation of any of the systems listed in paragraph (b)(3)(iv)(B) of this section, except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.

(B) The systems to which the requirements of paragraph (b)(3)(iv)(A) of this section apply are:

(1) Reactor protection system (RPS) including: reactor scram and reactor trip.[5]

(2) General containment isolation signals affecting containment isolation valves in more than one system or multiple main steam isolation valves (MSIVs).

---

[5] Actuation of the RPS <u>when the reactor is critical</u> is reportable under paragraph (b)(2)(iv)(B) of this section.

(3) Emergency core cooling systems (ECCS) for pressurized water reactors (PWRs) including: high-head, intermediate-head, and low-head injection systems and the low pressure injection function of residual (decay) heat removal systems.

(4) ECCS for boiling water reactors (BWRs) including: high-pressure and low-pressure core spray systems; high-pressure coolant injection system; low pressure injection function of the residual heat removal system.

(5) BWR reactor core isolation cooling system; isolation condenser system; and feedwater coolant injection system.

(6) PWR auxiliary or emergency feedwater system.

(7) Containment heat removal and depressurization systems, including containment spray and fan cooler systems.

(8) Emergency ac electrical power systems, including: emergency diesel generators (EDGs); hydroelectric facilities used in lieu of EDGs at the Oconee Station; and BWR dedicated Division 3 EDGs.

(v) 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:

(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.

(vi) 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 paragraph (b)(3)(v) of this section if redundant equipment in the same system was operable and available to perform the required safety function.

(vii) - (xi) [Reserved]

(xii) Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment.

(xiii) 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).

* * * * *

3. Section 50.73 is amended by revising sections (a), (b)(2)(ii)(F), (b)(2)(ii)(J), (b)(3), (d), and (e) and by removing and reserving paragraph (f) to read as follows:

§ 50.73 Licensee event report system.

(a) Reportable events. (1) 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 60 days after the discovery of the event. In the case of an invalid actuation reported under § 50.73(a)(2)(iv), other than actuation of the reactor protection system (RPS) when the reactor is critical, 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. Unless otherwise specified in this section, the licensee shall report an event if it occurred within three years of the date of discovery regardless of the plant mode or power level, and regardless of the significance of the structure, system, or component that initiated the event.

(2) The licensee shall report:

(i)(A) The completion of any nuclear plant shutdown required by the plant's Technical Specifications.

(B) Any operation or condition which was prohibited by the plant's Technical Specifications except when:

(1) The Technical Specification is administrative in nature;

(2) The event consisted solely of a case of a late surveillance test where the oversight was corrected, the test was performed, and the equipment was found to be capable of performing its specified safety functions; or

(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.

(C) Any deviation from the plant's Technical Specifications authorized pursuant to § 50.54(x) of this part.

(ii) Any event or condition that resulted in:

(A) The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or

(B) The nuclear power plant being in an unanalyzed condition that significantly degraded plant safety.

(iii) 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.

(iv)(A) Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section, except when:

(1) The actuation resulted from and was part of a pre-planned sequence during testing or reactor operation; or

(2) The actuation was invalid and;

(i) Occurred while the system was properly removed from service; or

(ii) Occurred after the safety function had been already completed.

(B) The systems to which the requirements of paragraph (a)(2)(iv)(A) of this section apply are:

(1) Reactor protection system (RPS) including: reactor scram or reactor trip.

(2) General containment isolation signals affecting containment isolation valves in more than one system or multiple main steam isolation valves (MSIVs).

(3) Emergency core cooling systems (ECCS) for pressurized water reactors (PWRs) including: high-head, intermediate-head, and low-head injection systems and the low pressure injection function of residual (decay) heat removal systems.

(4) ECCS for boiling water reactors (BWRs) including: high-pressure and low-pressure core spray systems; high-pressure coolant injection system; low pressure injection function of the residual heat removal system.

(5) BWR reactor core isolation cooling system; isolation condenser system; and feedwater coolant injection system.

(6) PWR auxiliary or emergency feedwater system.

(7) Containment heat removal and depressurization systems, including containment spray and fan cooler systems.

(8) Emergency ac electrical power systems, including: emergency diesel generators (EDGs); hydroelectric facilities used in lieu of EDGs at the Oconee Station; and BWR dedicated Division 3 EDGs.

(9) Emergency service water systems that do not normally run and that serve as ultimate heat sinks.

(v) Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to:

(A) Shut down the reactor and maintain it in a safe shutdown condition;

(B) Remove residual heat;

(C) Control the release of radioactive material; or

(D) Mitigate the consequences of an accident.

(vi) 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 paragraph (a)(2)(v) of this section if redundant equipment in the same system was operable and available to perform the required safety function.

(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 designed to:

(A) Shut down the reactor and maintain it in a safe shutdown condition;

(B) Remove residual heat;

(C) Control the release of radioactive material; or

(D) Mitigate the consequences of an accident.

(viii)(A) 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.

(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.

(ix)(A) Any event or condition that as a result of a single cause could have prevented the fulfillment of a safety function for two or more trains or channels in different systems that are needed to:

(1) Shut down the reactor and maintain it in a safe shutdown condition;

(2) Remove residual heat;

(3) Control the release of radioactive material; or

(4) Mitigate the consequences of an accident.

(B) Events covered in paragraph (ix)(A) of this section may include cases of procedural error, equipment failure, and/or discovery of a design, analysis, fabrication, construction, and/or procedural inadequacy. However, licensees are not required to report an event pursuant to paragraph (ix)(A) of this section if the event results from:

(1) A shared dependency among trains or channels that is a natural or expected consequence of the approved plant design; or

(2) Normal and expected wear or degradation.

(x) 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) * * *

(2) * * *

(ii) * * *

(F) The Energy Industry Identification System component function identifier and system name of each component or system referred to in the LER.

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

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

(3) 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 in the Two White Flint North Building, 11545 Rockville Pike, Rockville, Maryland; and at the Office of the Federal Register, 1100 L Street, NW, Washington, DC.

* * * * *

(J) For each human performance related root cause, the licensee shall discuss the cause(s) and circumstances.

* * * * *

(3) An assessment of the safety consequences and implications of the event. This assessment must include:

(i) The availability of 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.

* * * * *

(d) *Submission of reports.* Licensee Event Reports must be prepared on Form NRC 366 and submitted to the U.S. Nuclear Regulatory Commission, as specified in § 50.4.

(e) *Report legibility.* 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.

(f) *[Reserved]*

* * * * *

PART 72--LICENSING REQUIREMENTS FOR THE INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

4. The authority citation for part 72 continues to read as follows:

Authority: Secs. 51, 53, 57, 62, 63, 65, 69, 81, 161, 182, 183, 184, 186, 189, 68 Stat. 929, 930, 932, 933, 934, 935, 954, 955, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2077, 2092, 2093, 2095, 2099, 2111, 2201, 2232, 2233, 2234, 2236, 2237, 2238, 2282); sec. 274, Pub. L. 86-373, 73 Stat. 688, as amended (42 U.S.C. 5841, 5842, 5846); Pub. L. 95-601, sec. 10, 92 Stat. 2951 as amended by Pub. L. 102-486, sec. 7902, 106 Stat. 3123 (42 U.S.C. 5851); sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332); secs. 131, 132, 133, 135, 137, 141, Pub. L. 97-425, 96 Stat. 2229, 2230, 2232, 2241, sec. 148, Pub. L. 100-203, 101 Stat. 1330-235 (42 U.S.C. 10151, 10152, 10153, 10155, 10157, 10161, 10168).

Section 72.44(g) also issued under secs. 142(b) and 148(c), (d), Pub. L. 100-203, 101 Stat. 1330-232, 1330-236 (42 U.S.C. 10162(b), 10168(c), (d)). Section 72.46 also issued under sec. 189, 68 Stat. 955 (42 U.S.C. 2239); sec. 134, Pub. L. 97-425, 96 Stat. 2230 (42 U.S.C. 10154). Section 72.96(d) also issued under sec. 145(g), Pub. L. 100-203, 101 Stat. 1330-235 (42 U.S.C. 10165(g)). Subpart J also issued under secs. 2(2), 2(15), 2(19), 117(a), 141(h), Pub. L. 97-425, 96 Stat. 2202, 2203, 2204, 2222, 2224, (42 U.S.C. 10101, 10137(a), 10161(h)). Subparts K and L are also issued under sec. 133, 98 Stat. 2230 (42 U.S.C. 10153) and sec. 218(a), 96 Stat. 2252 (42 U.S.C. 10198).

5. Section 72.216 is revised to read as follows:

§ 72.216 Reports.

(a) [Reserved]

(b) [Reserved]

(c) The general licensee shall make initial and written reports in accordance with §§ 72.74 and 72.75.

Dated at Rockville, Maryland, this day of , 2000.

For the Nuclear Regulatory Commission.

Annette L. Vietti-Cook,
Secretary of the Commission.

Attachment 2

Regulatory Analysis

REGULATORY ANALYSIS

Modifications to 10 CFR 50.72, "Immediate notification,"
10 CFR 50.73, "Licensee event report system," and
10 CFR 72.216, "Reports"

(March 2000)

Proposed Action

The Nuclear Regulatory Commission (NRC) is amending the event reporting requirements for nuclear power reactors and independent spent fuel storage installations in 10 CFR 50.72, 50.73, and 72.216 to:

(1) update the current rules, including reducing or eliminating the reporting burden associated with events of little or no safety significance and

(2) better align the rules with the NRC's current needs, including revising reporting requirements based on importance to risk and extending the required reporting times consistent with the need for prompt NRC action.

Statement of the Problem

Experience with the current rules has indicated they are in need of change in several areas. For example:

(1) There is a need to reduce or eliminate the reporting burden associated with events of little or no safety significance; the final amendments eliminate reporting of those design problems that are insignificant and those cases of late surveillance tests that are insignificant.

(2) There is a need to better align the rules with the NRC's current needs; the final rules extend the required initial reporting times for some types of events to be more consistent with the actual need for prompt NRC action.

(3) There is a need to obtain information better related to risk; the final amendments revise the requirement to report safety system actuation in order to: (1) reduce reporting for systems and/or events with minimal risk significance, and (2) increase consistency of reporting for systems of greater risk significance.

Objectives

The objectives of these final amendments are as follows:

(1) To better align the reporting requirements with the NRC's needs for information to carry out its safety mission. An example is extending the required initial reporting times for some events, consistent with the time at which the reports are needed for NRC action.

(2) To reduce the reporting burden, consistent with the NRC's needs. An example is eliminating the reporting of design and analysis defects and deviations with little or no risk- or safety-significance.

(3) To clarify the reporting requirements where needed. An example is clarifying the criteria for reporting design or analysis defects or deviations.

(4) Any changes should be consistent with NRC actions to improve integrated plant assessment.

Alternatives

The only reasonable alternative that has been identified is to take no action.

Consequences

1. Status Quo

This is the base case. The incremental values and impacts for the base case are zero. However, maintaining the status quo would result in continued submittal of the some reports which the NRC has now identified as unneeded.

2. Proposed Action

The one-time implementation costs to licensees are estimated to be about 70 hours per reactor for revising procedures and about 130 hours per reactor for training. This yields an estimated burden increase of about 21,000 hours, or about 200 hours per reactor for 104 operating reactors.

A key benefit of the proposed amendments would be a reduction in the recurring annual reporting burden on licensees, as a result of reducing the efforts associated with reporting events of little or no risk or safety significance. Based on a review of past reports, the proposed amendments are expected to result in about 180 fewer telephone notifications per year and about 270 fewer written licensee event reports (LERs) per year under 10 CFR 50.72 and 50.73. It is estimated that licensees expend 1.5 hours per telephone notification and 50 hours per written LER for the events involved. This yields an estimated recurring annual burden reduction of about 14,300 hours per year industry-wide, or about 140 hours per reactor per year.

The NRC's recurring annual review efforts for telephone notifications will not be significantly reduced because the operations officer and daily event screening systems would remain about the same. For similar reasons, the NRC's recurring annual review efforts for written LERs will not be significantly reduced.

The estimated changes in cost or burden have been discounted to present value using a 7-percent real discount rate[1] and 20-year plant life, summed, and rounded to 2 significant digits. The results, in terms of hours, are presented in Table 1. The same results, converted to dollars at a value of about $78 per hour[2] and rounded to 2 significant digits are presented in Table 2.

---

[1] A real discount rate of 7 percent was used, as specified in OMB Circular A-94. Use of a more realistic 3-percent rate would not change the basic conclusion. It would make the proposed action appear more attractive because the benefits, which are in the future, would have a greater present value.

[2] NUREG/BR/1084, "Regulatory Analysis Technical Evaluation Handbook," January 1997, Page 5.55, provides a value of $67.50 per hour in 1996 dollars for NRC technical personnel. (Those involved in rulemaking and reviewing LERs would be technical personnel.) This includes allowances for benefits, management and secretarial support. This translates into about $78 per hour in current dollars. The same figure is appropriate for licensee technical personnel who will be involved in procedure writing, training and reporting.

Table 1

Estimated Changes in Cost or Burden in Terms of Hours

	One time implementation costs	Recurring annual costs (savings)	Present value of recurring annual costs (savings)	Net effect: Present value of all costs (savings)
Changes in industry costs	21,000	(14,000)	(150,000)	(130,000)
Changes in NRC costs	not applicable[3]	not significant	not significant	not significant

Table 2

Estimated Changes in Cost or Burden in Terms of Dollars

	One time implementation costs	Recurring annual costs (savings)	Present value of recurring annual costs (savings)	Net effect: Present value of all costs (savings)
Changes in industry costs	1.6 Million	(1.1 Million)	(11 Million)	(9.8 Million)[4]
Changes in NRC costs	not applicable[5]	not significant	not significant	not significant

---

[3] The NRC's implementation costs consist of developing the rule. Thus, they have already been expended by the time the Commission decides on whether to approve the final rule.

[4] This number appears inconsistent with preceding numbers due to roundoff.

[5] See Footnote 3.

Decision Rationale

The benefits of the proposed action (which consist of reduced recurring costs) outweigh the costs (which consist of one-time implementation costs).

Event Reporting Guidelines (NUREG-1022, Revision 2)

NUREG-1022
Rev. 2

EVENT REPORTING GUIDELINES
10 CFR 50.72 and 50.73

Manuscript Completed: _____________
Date Published: ______________

U.S. Nuclear Regulatory Commission
Washington, DC 20555

PAPERWORK REDUCTION ACT STATEMENT

The information collections contained in this NUREG report are covered by the requirements of 10 CFR Part 50, which were approved by the Office of Management and Budget, approval number 3150-0011.

Public Protection Notification

If a means used to impose 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.

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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Federal Register notice

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

AFW	auxiliary feedwater
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	*Code of Federal Regulations*
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
EFW	emergency feedwater
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

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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 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 underlining the appropriate text. In some cases, strikeout marking is also provided to show that specific items are being deleted.

Table 1. Reportable Events

Declaration of an Emergency Class *(See Section 3.1.1 of this report)*	
§ 50.72(a)(1)(i) "The declaration of any of the Emergency Classes specified in the licensee's approved Emergency Plan."	
Plant Shutdown Required by Technical Specifications *(See Section 3.2.1 of this report)*	
§ 50.72(b)(2)(i) "The initiation of any nuclear plant shutdown required by the plant's Technical Specifications."	**§ 50.73(a)(2)(i)(A)** "The completion of any nuclear plant shutdown required by the plant's Technical Specifications."
Operation or Condition Prohibited by Technical Specifications *(See Section 3.2.2 of this report)*	
	§ 50.73(a)(2)(i)(B) "Any operation or condition which was prohibited by the plant's Technical Specifications except when: *(1)* The Technical Specification is administrative in nature; *(2)* The event consisted solely of a case of a late surveillance test where the oversight was corrected, the test was performed, and the equipment was found to be capable of performing its specified safety functions; or *(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."
Deviation from Technical Specifications Authorized under § 50.54(x) *(See Section 3.2.3 of this report)*	
§ 50.72(b)(1) "... any deviation from the plant's Technical Specifications authorized pursuant to § 50.54(x) of this part."	**§ 50.73(a)(2)(i)(C)** "Any deviation from the plant's Technical Specifications authorized pursuant to § 50.54(x) of this part."
Degraded or Unanalyzed Condition *(See Section 3.2.4 of this report)*	
§ 50.72(b)(3)(ii) "Any event or condition that results in: **(A)** The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or	**§ 50.73(a)(2)(ii)** "Any event or condition that resulted in: **(A)** The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or

Reportable Events (continued)

(B) The nuclear power plant being in an unanalyzed condition that significantly degrades plant safety."	**(B)** The nuclear power plant being in an unanalyzed condition that significantly degraded plant safety."
External Threat or Hampering ***(See Section 3.2.5 of this report)***	
	§ 50.73(a)(2)(iii) 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.
System Actuation ***(See Section 3.2.6 of this report)***	
§ 50.72(b)(2)(iv)(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 except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation." **§ 50.72(b)(2)(iv)(B)** "Any event or condition that results in 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."	
§ 50.72(b)(3)(iv)(A) "Any event or condition that results in valid actuation of any of the systems listed in paragraph (b)(3)(iv)(B) of this section, except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation."	**§ 50.73(a)(2)(iv)(A)** "Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section, except when: *(1)* The actuation resulted from and was part of a pre-planned sequence during testing or reactor operation; or *(2)* The actuation was invalid and; *(i)* Occurred while the system was properly removed from service; or *(ii)* Occurred after the safety function had been already completed."
§ 50.72(b)(3)(iv)(B) "The systems to which the requirements of paragraph (b)(3)(iv)(A) of	**§ 50.73(a)(2)(iv)(B)** "The systems to which the requirements of paragraph (a)(2)(iv)(A) of

this section apply are: *(1)* Reactor protection system (RPS) including: reactor scram and reactor trip.[5] *(2)* General containment isolation signals affecting containment isolation valves in more than one system or multiple main steam isolation valves (MSIVs). *(3)* Emergency core cooling systems (ECCS) for pressurized water reactors (PWRs) including: high-head, intermediate-head, and low-head injection systems and the low pressure injection function of residual (decay) heat removal systems. *(4)* ECCS for boiling water reactors (BWRs) including: high-pressure and low-pressure core spray systems; high-pressure coolant injection system; low pressure injection function of the residual heat removal system. *(5)* BWR reactor core isolation cooling system; isolation condenser system; and feedwater coolant injection system. *(6)* PWR auxiliary or emergency feedwater system. *(7)* Containment heat removal and depressurization systems, including containment spray and fan cooler systems. *(8)* Emergency ac electrical power systems, including: emergency diesel generators (EDGs); hydroelectric facilities used in lieu of EDGs at the Oconee Station; and BWR dedicated Division 3 EDGs. ___________ [5] Actuation of the RPS <u>when the reactor is critical</u> is reportable under § 50.72(b)(2)(iv)(B)."	this section apply are: *(1)* Reactor protection system (RPS) including: reactor scram or reactor trip. *(2)* General containment isolation signals affecting containment isolation valves in more than one system or multiple main steam isolation valves (MSIVs). *(3)* Emergency core cooling systems (ECCS) for pressurized water reactors (PWRs) including: high-head, intermediate-head, and low-head injection systems and the low pressure injection function of residual (decay) heat removal systems. *(4)* ECCS for boiling water reactors (BWRs) including: high-pressure and low-pressure core spray systems; high-pressure coolant injection system; low pressure injection function of the residual heat removal system. *(5)* BWR reactor core isolation cooling system; isolation condenser system; and feedwater coolant injection system. *(6)* PWR auxiliary or emergency feedwater system. *(7)* Containment heat removal and depressurization systems, including containment spray and fan cooler systems. *(8)* Emergency ac electrical power systems, including: emergency diesel generators (EDGs); hydroelectric facilities used in lieu of EDGs at the Oconee Station; and BWR dedicated Division 3 EDGs. *(9)* Emergency service water systems that do not normally run and that serve as ultimate heat sinks."
Event or Condition that Could Have Prevented Fulfillment of a Safety Function ***(See Section 3.2.7 of this report)***	
§ 50.72(b)(3)(v) "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: (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."	**§ 50.73(a)(2)(v)** "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident."

Reportable Events (continued)

§ 50.72(b)(3)(vi) "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 paragraph (b)(3)(v) of this section if redundant equipment in the same system was operable and available to perform the required safety function."	**§ 50.73(a)(2)(vi)** "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 paragraph (a)(2)(v) of this section if redundant equipment in the same system was operable and available to perform the required safety function."
Common Cause Inoperability of Independent Trains or Channels ***(See Section 3.2.8 of this report)***	
	§ 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 designed to: (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident."
Radioactive Release (See Section 3.2.9 of this report)	
	§ 50.73(a)(2)(viii)(A) "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." **§ 50.73(a)(2)(viii)(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."

Reportable Events (continued)

Internal Threat or Hampering ***(See Section 3.2.10 of this report)***	
	§ 50.73(a)(2)(x) "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."
Transport of a Contaminated Person Offsite ***(See Section 3.2.11 of this report)***	
	§ 50.72(b)(3)(xii) "Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment."
News Release or Notification of Other Government Agency ***(See Section 3.2.12 of this report)***	
	§ 50.72(b)(2)(xi) "Any event or situation, related to the health and safety of the public or onsite 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 onsite fatality or inadvertent release of radioactively contaminated materials."
Loss of Emergency Preparedness Capabilities ***(See Section 3.2.13 of this report)***	
	§ 50.72(b)(3)(xiii) "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)."
Single Cause that Could Have Prevented Fulfillment of the Safety Functions of Trains or Channels in Different Systems ***(See Section 3.2.14 of this report)***	
	§ 50.73(a)(2)(ix)(A) "Any event or condition that as a result of a single cause could have prevented the fulfillment of a safety function for

	two or more trains or channels in different systems that are needed to: *(1)* Shut down the reactor and maintain it in a safe shutdown condition; *(2)* Remove residual heat; *(3)* Control the release of radioactive material; or *(4)* Mitigate the consequences of an accident." **§ 50.73(a)(2)(ix)(B)** "Events covered in paragraph (ix)(A) of this section may include cases of procedural error, equipment failure, and/or discovery of a design, analysis, fabrication, construction, and/or procedural inadequacy. However, licensees are not required to report an event pursuant to paragraph (ix)(A) of this section if the event results from: *(1)* A shared dependency among trains or channels that is a natural or expected consequence of the approved plant design; or *(2)* Normal and expected wear or degradation."

Table 2. Changes in Reporting Requirements

Previous requirements.	Amended requirements.
§ 50.72 Immediate notification requirements for operating nuclear power reactors.	
§ 50.72(a) General requirements.[1] [1] 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, and 73.71.	**§ 50.72(a) General requirements.**[1] [1] 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>72.216,</u> and 73.71.
§ 50.72(a)(1) Each nuclear power reactor licensee licensed under § 50.21(b) or § 50.22 of this part shall notify the NRC Operations Center via the Emergency Notification System of: **(i)** The declaration of any of the Emergency Classes specified in the licensee's approved Emergency Plan;[2] or **(ii)** <u>Of</u> those non-Emergency events specified in paragraph (b) of this section. [2] These Emergency Classes are addressed in Appendix E of this part.	**§ 50.72(a)(1)** Each nuclear power reactor licensee licensed under § 50.21(b) or § 50.22 of this part shall notify the NRC Operations Center via the Emergency Notification System of: **(i)** The declaration of any of the Emergency Classes specified in the licensee's approved Emergency Plan;[2] or **(ii)** Those non-emergency events specified in paragraph (b) of this section <u>that occurred within three years of the date of discovery</u>. *Footnote 2 is unchanged.*
§ 50.72(a)(2) If the Emergency Notification System 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.[3,4] [3] Commercial telephone number of the NRC Operations Center is (301) 816-5100. <u>[4] [Reserved]</u>	*Unchanged.* *Footnote 3 is unchanged.* *Former Footnote 4 is deleted.*
§ 50.72(a)(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 Emergency Classes.	*Unchanged.*
§ 50.72(a)(4) The licensee shall activate the Emergency Response Data System (ERDS)[5] 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] Requirements for ERDS are addressed in Appendix E, Section VI.	*Unchanged.* *Former Footnote 5 is renumbered 4. Otherwise unchanged.*

Changes in Reporting Requirements (continued)

Previous requirements.	Amended requirements.
§ 50.72(a)(5) When making a report under paragraph <u>(a)(3)</u> of this section, the licensee shall identify: **(i)** The Emergency Class declared; or **(ii)** <u>Either</u> paragraph (b)(1), "One-Hour Report," or paragraph (b)(2) "Four-Hour Report," as the paragraph of this section requiring notification of the Non-Emergency Event.	**§ 50.72(a)(5)** When making a report under paragraph <u>(a)(1)</u> of this section, the licensee shall identify: **(i)** The Emergency Class declared; or **(ii)** Paragraph (b)(1), "One-hour reports," paragraph (b)(2) "Four-hour reports," or <u>paragraph (b)(3), "Eight-hour reports</u>," as the paragraph of this section requiring notification of the non-emergency event.
§ 50.72(b) Non-emergency events -- (1) One-hour reports. If not reported as a declaration of an Emergency Class under paragraph (a) of this section, the licensee shall notify the NRC as soon as practical and in all cases within one hour of the occurrence of <u>any of the following</u>:	**§ 50.72(b) Non-emergency events -- (1) One-hour reports.** If not reported as a declaration of an Emergency Class under paragraph (a) of this section, the licensee shall notify the NRC as soon as practical and in all cases within one hour of the occurrence of
One-hour report. **§ 50.72<u>(b)(1)(i)(B)</u>** Any deviation from the plant's Technical Specifications authorized pursuant to § 50.54(x) of this part.	*One-hour report.* any deviation from the plant's Technical Specifications authorized pursuant to § 50.54(x) of this part.
One-hour report. **§ 50.72(b)<u>(1)(i)(A)</u>** The initiation of any nuclear plant shutdown required by the plant's Technical Specifications.	*Moved to four-hour reports and renumbered (b)<u>(2)(i)</u>. Otherwise unchanged.*
One-hour report. **§ 50.72(b)<u>(1)</u>(ii)** Any event or condition <u>during operation</u> that results in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or results in the nuclear power plant being: **<u>(A)</u>** In an unanalyzed condition that significantly <u>compromises</u> plant safety; **(B)** <u>In a condition that is outside the design basis of the plant; or</u> **(C)** <u>In a condition not covered by the plant's operating and emergency procedures.</u>	*Eight-hour report.* **§ 50.72(b)<u>(3)</u>(ii)** Any event or condition that results in: **<u>(A)</u>** The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or **<u>(B)</u>** The nuclear power plant being in an unanalyzed condition that significantly <u>degrades</u> plant safety. *Former Items (B) and (C) are deleted. Refer primarily to §§: 50.73(a)(2)(i)(B); 50.73(a)(2)(ii)(A) and 50.72(b)(3)(ii)(A); 50.73(a)(2)(ii)(B) and 50.72(b)(3)(ii)(B); 50.73(a)(2)(v) and 50.72(b)(3)(v); 50.73(a)(2)(vii), and; 50.73(a)(2)(ix)(A).*
One-hour report. **<u>§ 50.72(b)(1)(iii)</u>** <u>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</u>	*Deleted.* *Refer to Emergency Plan regarding declaration of an Emergency Class.* *Refer to § 50.73(a)(2)(iii) below regarding LER requirements.*
One-hour report. **§ 50.72(b)(1)(iv)** 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.	*Four-hour report.* **§ 50.72(b)(2)(iv)<u>(A)</u>** 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 <u>except when the</u>

Changes in Reporting Requirements (continued)

Previous requirements.	Amended requirements.
	actuation results from and is part of a pre-planned sequence during testing or reactor operation.
One-hour report. **§ 50.72(b)(1)(v)** Any event that results in a major loss of emergency assessment capability, offsite response capability, or communications capability (e.g., significant portion of control room indication, Emergency Notification System, or offsite notification system).	*Eight-hour report.* **§ 50.72(b)(3)(xiii)** 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).
One-hour report. **§ 50.72(b)(1)(vi)** Any event 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 nuclear power plant including fires, toxic gas releases, or radioactive releases.	*Deleted.* *Refer to Emergency Plan regarding declaration of an Emergency Class.* *Refer to § 50.73(a)(2)(x) below regarding LER requirements.*
§ 50.72(b)(2) Four-hour reports. If not reported under paragraphs (a) or (b)(1) of this section, the licensee shall notify the NRC as soon as practical and in all cases, within four hours of the occurrence of any of the following:	*Unchanged.*
Four-hour report. **§ 50.72(b)(2)(i)** Any event, found while the reactor is shut down, that, had it been found while the reactor was in operation, would have resulted in the nuclear power plant, including its principal safety barriers, being seriously degraded or being in an unanalyzed condition that significantly compromises plant safety.	*Eight-hour report. Refer to § 50.72(b)(3)(ii) above, which captures these events regardless of whether or not they are found while the reactor is shutdown.*
Four-hour report. **§ 50.72(b)(2)(ii)** Any event or condition that results in a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS), except when: **(A)** The actuation results from and is part of a pre-planned sequence during testing or reactor operation;	*Four-hour report.* **§ 50.72(b)(2)(iv)(B)** Any event or condition that results in 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. *Eight-hour report.* **§ 50.72(b)(3)(iv)(A)** Any event or condition that results in valid actuation of any of the systems listed in paragraph (b)(3)(iv)(B) of this section except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.
(B) The actuation is invalid and: *(1)* Occurs while the system is properly removed from service; (2) Occurs after the safety function has been already completed; or *(3)* Involves only the following specific ESFs or their equivalent systems: *(i)* Reactor water clean-up system; *(ii)* Control room emergency ventilation system; *(iii)* Reactor building ventilation	*Former Item (B) is deleted. Invalid actuations, aside from critical scrams, are no longer reportable under § 50.72.*

Changes in Reporting Requirements (continued)

Previous requirements.	Amended requirements.
system; *(iv)* Fuel building ventilation system; or *(v)* Auxiliary building ventilation system.	
	New paragraph under eight-hour reports. **§ 50.72(b)(3)(iv)(B)** The systems to which the requirements of paragraph (b)(3)(iv)(A) of this section apply are: *(1)* Reactor protection system (RPS) including: reactor scram and reactor trip.[5] *(2)* General containment isolation signals affecting containment isolation valves in more than one system or multiple main steam isolation valves (MSIVs). *(3)* Emergency core cooling systems (ECCS) for pressurized water reactors (PWRs) including: high-head, intermediate-head, and low-head injection systems and the low pressure injection function of residual (decay) heat removal systems. *(4)* ECCS for boiling water reactors (BWRs) including: high-pressure and low-pressure core spray systems; high-pressure coolant injection system; low pressure injection function of the residual heat removal system. *(5)* BWR reactor core isolation cooling system; isolation condenser system; and feedwater coolant injection system. *(6)* PWR auxiliary or emergency feedwater system. *(7)* Containment heat removal and depressurization systems, including containment spray and fan cooler systems. *(8)* Emergency ac electrical power systems, including: emergency diesel generators (EDGs); hydroelectric facilities used in lieu of EDGs at the Oconee Station; and BWR dedicated Division 3 EDGs. ________ [5] Actuation of the RPS when the reactor is critical is reportable under paragraph (b)(2)(iv)(B) of this section.
Four-hour report. **§ 50.72(b)(2)(iii)** Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material, or (D) Mitigate the consequences of an accident.	*Eight-hour report.* **§ 50.72(b)(3)(v)** 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: (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.
	New paragraph under eight-hour reports. **§ 50.72(b)(3)(vi)** 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

Changes in Reporting Requirements (continued)

Previous requirements.	Amended requirements.
	procedural inadequacies. However, individual component failures need not be reported pursuant to paragraph (b)(3)(v) of this section if redundant equipment in the same system was operable and available to perform the required safety function.
Four-hour report. **§ 50.72(b)(2)(iv)(A)** Any airborne radioactive release that, when averaged over a time period of 1 hour, results in concentrations in an unrestricted area that exceed 20 times the applicable concentration specified in appendix B to part 20, table 2, column 1. **(B)** Any liquid effluent release that, when averaged over a time of 1 hour, exceeds 20 times the applicable concentration 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. (Immediate notifications made under this paragraph also satisfy the requirements of § 20.2202 of this chapter.)	*Deleted.* *Refer to Emergency Plan regarding declaration of an Emergency Class.* *Refer to § 50.72(b)(2)(xi) below regarding a news release or notification of another agency.* *Refer to § 20.2202 regarding events reportable under that section.* *Refer to § 50.73(a)(2)(viii) below regarding LER requirements.*
Four-hour report. **§ 50.72(b)(2)(v)** Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment.	*Moved to eight-hour reports and renumbered (b)(3)(xii). Otherwise unchanged.*
Four-hour report. **§ 50.72(b)(2)(vi)** Any event or situation, related to the health and safety of the public or onsite 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 onsite fatality or inadvertent release of radioactively contaminated materials.	*Four-hour report. Renumbered (b)(2)(xi). Otherwise unchanged.*
Four-hour report. **§ 50.72(b)(2)(vii)** Any instance of: **(A)** A defect in any spent fuel storage cask structure, system, or component which is important to safety; or **(B)** A significant reduction in the effectiveness of any spent fuel storage cask confinement system during use of the storage cask under a general license issued under § 72.210 of this chapter. A followup written report is required by § 72.216(b) of this chapter including a description of the means employed to repair any defects or damage and prevent recurrence, using instructions in § 72.4, within 30 days of the report submitted in paragraph (a). A copy of the written report must be sent to the administrator of the appropriate Nuclear Regulatory Commission regional office shown in appendix D to part 20 of this chapter.	*Deleted. Refer to § 72.216 below, which captures these events.*
§ 50.72(c) Followup notification. With respect to the	*Unchanged.*

<table>
<tr><th>Previous requirements.</th><th>Amended requirements.</th></tr>
<tr><td>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:
(1) *Immediately report* **(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
(ii) any change from one Emergency Class to another, or
(iii) a termination of the Emergency Class.
(2) *Immediately report* (i) the results of ensuing evaluations or assessments of plant conditions,
(ii) the effectiveness of response or protective measures taken, and
(iii) information related to plant behavior that is not understood.
(3) Maintain an open, continuous communication channel with the NRC Operations Center upon request by the NRC.</td><td></td></tr>
<tr><td colspan="2">**§ 50.73 Licensee event report system.**</td></tr>
<tr><td>**§ 50.73(a) *Reportable events.*** **(1)** 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 <u>30 days</u> after the discovery of the event. Unless otherwise specified in this section, the licensee shall report an event regardless of the plant mode or power level, and regardless of the significance of the structure, system, or component that initiated the event.</td><td>**§ 50.73(a) *Reportable events.*** **(1)** 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 <u>60 days</u> after the discovery of the event. <u>In the case of an invalid actuation reported under § 50.73(a)(2)(iv), other than actuation of the reactor protection system (RPS) when the reactor is critical, 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.</td></tr>
<tr><td>**§ 50.73(a)(2) The licensee shall report: (i)(A)** The completion of any nuclear plant shutdown required by the plant's Technical Specifications; or</td><td>*Unchanged.*</td></tr>
<tr><td>**§ 50.73(a)(2)(i)(B)** Any operation or condition prohibited by the plant's Technical Specifications; or</td><td>**§ 50.73(a)(2)(i)(B)** Any operation or condition <u>which was</u> prohibited by the plant's Technical Specifications <u>except when</u>:
<u>*(1)* The Technical Specification is administrative in nature;</u>
<u>*(2)* The event consisted solely of a case of a late surveillance test where the oversight was corrected,</u></td></tr>
</table>

Changes in Reporting Requirements (continued)

Previous requirements.	Amended requirements.
	the test was performed, and the equipment was found to be capable of performing its specified safety functions; or *(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.
§ 50.73(a)(2)(i)(C) Any deviation from the plant's Technical Specifications authorized pursuant to § 50.54(x) of this part.	*Unchanged.*
§ 50.73(a)(2)(ii) Any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded, or that resulted in the nuclear power plant being: (A) In an unanalyzed condition that significantly compromised plant safety; (B) In a condition that was outside the design basis of the plant; or (C) In a condition not covered by the plant's operating and emergency procedures.	**§ 50.73(a)(2)(ii)** Any event or condition that resulted in: **(A)** The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or **(B)** The nuclear power plant being in an unanalyzed condition that significantly degraded plant safety. *Former Items (B) and (C) are deleted. Refer primarily to §§ 50.73(a)(2)(i)(B), (a)(2)(ii)(A), (a)(2)(ii)(B), (a)(2)(v), (a)(2)(vii), and (a)(2)(ix)(A).*
§ 50.73(a)(2)(iii) 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.	*Unchanged.*
§ 50.73(a)(2)(iv) 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: (A) The actuation resulted from and was part of a pre-planned sequence during testing or reactor operation; (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 following specific ESFs or their equivalent systems: *(i)* Reactor water clean-up system; *(ii)* Control room emergency ventilation system; *(iii)* Reactor building ventilation system; *(iv)* Fuel building ventilation system; or *(v)* Auxiliary building ventilation.	**§ 50.73(a)(2)(iv)(A)** Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section, except when: *(1)* The actuation resulted from and was part of a pre-planned sequence during testing or reactor operation; or *(2)* The actuation was invalid and; *(i)* Occurred while the system was properly removed from service; or *(ii)* Occurred after the safety function had been already completed. *Former Item (3) is deleted. Actuations of these systems are no longer reportable under § 50.73.*

Changes in Reporting Requirements (continued)

Previous requirements.	Amended requirements.
	New paragraph. **§ 50.73(a)(2)(iv)(B)** The systems to which the requirements of paragraph (a)(2)(iv)(A) of this section apply are: *(1)* Reactor protection system (RPS) including: reactor scram or reactor trip. *(2)* General containment isolation signals affecting containment isolation valves in more than one system or multiple main steam isolation valves (MSIVs). *(3)* Emergency core cooling systems (ECCS) for pressurized water reactors (PWRs) including: high-head, intermediate-head, and low-head injection systems and the low pressure injection function of residual (decay) heat removal systems. *(4)* ECCS for boiling water reactors (BWRs) including: high-pressure and low-pressure core spray systems; high-pressure coolant injection system; low pressure injection function of the residual heat removal system. *(5)* BWR reactor core isolation cooling system; isolation condenser system; and feedwater coolant injection system. *(6)* PWR auxiliary or emergency feedwater system. *(7)* Containment heat removal and depressurization systems, including containment spray and fan cooler systems. *(8)* Emergency ac electrical power systems, including: emergency diesel generators (EDGs); hydroelectric facilities used in lieu of EDGs at the Oconee Station; and BWR dedicated Division 3 EDGs. *(9)* Emergency service water systems that do not normally run and that serve as ultimate heat sinks.
§ 50.73(a)(2)(v) Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident.	**§ 50.73(a)(2)(v)** Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident.
§ 50.73(a)(2)(vi) 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.	**§ 50.73(a)(2)(vi)** 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 paragraph (a)(2)(v) of this section if redundant equipment in the same system was operable and available to perform the required safety function.
§ 50.73(a)(2)(vii) Any event where a single cause or condition caused at least one independent train or	*Unchanged.*

Changes in Reporting Requirements (continued)

Previous requirements.	Amended requirements.
channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to: (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident.	
§ 50.73(a)(2)(viii)(A) 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. **(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.	*Unchanged.*
§ 50.73(a)(2)(ix) 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.	*Deleted. Refer to § 20.2203(a)(3) regarding reports required under that paragraph.*
	New requirement. ***§ 50.73(a)(2)*****(ix)(A)** Any event or condition that as a result of a single cause could have prevented the fulfillment of a safety function for two or more trains or channels in different systems that are needed to: *(1)* Shut down the reactor and maintain it in a safe shutdown condition; *(2)* Remove residual heat; *(3)* Control the release of radioactive material; or *(4)* Mitigate the consequences of an accident. **§ 50.73(a)(2)(ix)(B)** Events covered in paragraph (ix)(A) of this section may include cases of procedural error, equipment failure, and/or discovery of a design, analysis, fabrication, construction, and/or procedural inadequacy. However, licensees are not required to report an event pursuant to paragraph (ix)(A) of this section if the event results from: *(1)* A shared dependency among trains or channels that is a natural or expected consequence of the approved plant design; or *(2)* Normal and expected wear or degradation.
§ 50.73(a)(2)(x) 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	*Unchanged.*

Previous requirements.	**Amended requirements.**
of the nuclear power plant including fires, toxic gas releases, or radioactive releases.	
§ 50.73(b), *Contents.* The Licensee Event Report shall contain: **§ 50.73(b)(1)** 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. **§ 50.73(b)(2)(i)** 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. **§ 50.73(b)(2)(ii)** The narrative description must include the following specific information as appropriate for the particular event: **§ 50.73(b)(2)(ii)(A)** Plant operating conditions before the event. **§ 50.73(b)(2)(ii)(B)** Status of structures, components, or systems that were inoperable at the start of the event and that contributed to the event. **§ 50.73(b)(2)(ii)(C)** Dates and approximate times of occurrences. **§ 50.73(b)(2)(ii)(D)** The cause of each component or system failure or personnel error, if known. **§ 50.73(b)(2)(ii)(E)** The failure mode, mechanism, and effect of each failed component, if known.	*Unchanged.*
§ 50.73(b)(2)(ii)(F) The Energy Industry Identification System component function identifier and system name of each component or system referred to in the LER. ***(1)*** The Energy Industry Identification System is defined in: IEEE Std 803-1983 (May 16, 1983) Recommended Practices for Unique Identification Plants and Related Facilities--Principles and Definitions. ***(2)*** IEEE Std 803-1983 has been approved for incorporation by reference by the Director of the *Federal Register*. 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 11545 Rockville Pike, Rockville, Maryland 20852 - 2738; and at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.	**§ 50.73(b)(2)(ii)(F)** The Energy Industry Identification System component function identifier and system name of each component or system referred to in the LER. ***(1)*** The Energy Industry Identification System is defined in: IEEE Std 803-1983 (May 16, 1983) Recommended Practice for Unique Identification in Power Plants and Related Facilities--Principles and Definitions. ***(2)*** IEEE Std 803-1983 has been approved for incorporation by reference by the Director of the *Federal Register*. ***(3)*** 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 in the Two White Flint North Building, 11545 Rockville Pike, Rockville, Maryland; and at the Office of the Federal Register, 1100 L Street, NW, Washington, DC.
§ 50.73(b)(2)(ii)(G) For failures of components	*Unchanged.*

Changes in Reporting Requirements (continued)

Previous requirements.	**Amended requirements.**
with multiple functions, include a list of systems or secondary functions that were also affected. **§ 50.73(b)(2)(ii)(H)** 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. **§ 50.73(b)(2)(ii)(I)** The method of discovery of each component or system failure or procedural error.	
§ 50.73(b)(2)(ii)(J)*(1)* Operator actions that affected the course of the event, including operator errors, procedural deficiencies, or both, that contributed to the event. ***(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).	**§ 50.73(b)(2)(ii)(J)** For each human performance related root cause, the licensee shall discuss the cause(s) and circumstances.
§ 50.73(b)(2)(ii)(K) Automatically and manually initiated safety system responses. **§ 50.73(b)(2)(ii)(L)** The manufacturer and model number (or other identification) of each component that failed during the event.	*Unchanged.*
§ 50.73(b)(3) An assessment of the safety consequences and implications of the event. This assessment must include the availability of other systems or components that could have performed the same function as the components and systems that failed during the event.	**§ 50.73(b)(3)** An assessment of the safety consequences and implications of the event. This assessment must include: **(i)** The availability of 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.
§ 50.73(b)(4) A description of any corrective actions planned as a result of the event, including those to reduce the probability of similar events	*Unchanged.*

Changes in Reporting Requirements (continued)

Previous requirements.	Amended requirements.
occurring in the future. **§ 50.73(b)(5)** Reference to any previous similar events at the same plant that are known to the licensee. **§ 50.73(b)(6)** 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.	
§ 50.73(c) Supplemental information. 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 an 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.	*Unchanged.*
§ 50.73(d) ***Submission of reports.*** Licensee Event Reports must be prepared on Form NRC 366 and submitted <u>within 30 days of discovery of a reportable event or situation</u> to the U.S. Nuclear Regulatory Commission, as specified in § 50.4.	**§ 50.73(d)** ***Submission of reports.*** Licensee Event Reports must be prepared on Form NRC 366 and submitted to the U.S. Nuclear Regulatory Commission, as specified in § 50.4.
§ 50.73(e) ***Report legibility.*** 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.	*Unchanged.*
§ 50.73(f) ***Exemptions.*** Upon written request from a licensee including adequate justification or at the initiation of the NRC staff, the NRC Executive Director for Operations may, by a letter to the licensee, grant exemptions to the reporting requirements under this section.	*Deleted. Refer to § 50.12 regarding exemptions.*
§ 50.73(g) ***Reportable occurrences.*** The requirements contained in this section replace all existing requirements for licensees to report "Reportable Occurrences" as defined in individual plant Technical Specifications.	*Unchanged.*
§72.216 Reports.	
§ 72.216(a) <u>The general licensee shall make an initial report under § 50.72(b)(2)(vii) of this chapter of any:</u> <u>**(1)** Defect discovered in any spent fuel storage cask structure, system, or component which is important to safety; or</u>	**§ 72.216(a)** <u>[Reserved.]</u>

Changes in Reporting Requirements (continued)

Previous requirements.	Amended requirements.
(2) Instance in which there is a significant reduction in the effectiveness of any spent fuel storage cask confinement system during use.	
§ 72.216(b) A written report, including a description of the means employed to repair any defects or damage and prevent recurrence, must be submitted using instructions in § 72.4 within 30 days of the report submitted in paragraph (a) of this section. A copy of the written report must be sent to the administrator of the appropriate Nuclear Regulatory Commission regional office shown in appendix D to part 20 of this chapter.	**§ 72.216(b)** [Reserved.]
§ 72.216(c) The general licensee shall make initial and written reports in accordance with Secs. 72.74 and 72.75, except for the events specified by Sec. 72.75(b)(2) and (3) for which the initial reports will be made under paragraph (a) of this section.	**§ 72.216(c)** The general licensee shall make initial and written reports in accordance with §§ 72.74 and 72.75.
Sections 72.74 and 72.75 are unchanged. They capture the reports discussed in the former §§ 72.216(a) and 72.216(b) above, as well as a number of other reports.	

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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~~ <u>one type of event</u> "...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~~ <u>eight</u> hours of the occurrence of any of the following: ...."

<u>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.</u>

<u>For the case of an event for which a news release is planned, as reported under 10 CFR 50.72(b)(2)(xi), the purpose of the report is to provide timely and accurate information so the</u>

NRC can respond to heightened public concern. Accordingly, it makes sense to provide the report by the time the news release is issued.

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.

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 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.[6] 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 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.)

[6]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 General Requirements

3.1.1 Immediate Notifications

§ 50.72(a) General Requirements[1]	**§ 50.73**
"**(1)** Each nuclear power reactor licensee licensed under § 50.21(b) or § 50.22 of this part shall notify the NRC Operations Center via the Emergency Notification System of: (i) The declaration of any of the Emergency Classes specified in the licensee's approved Emergency Plan;[2] or (ii) Those non-emergency events specified in paragraph (b) of this section <u>that occurred within three years of the date of discovery</u>. **(2)** If the Emergency Notification System 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.[3] **(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 Emergency Classes. **(4)** The licensee shall activate the Emergency Response Data System (ERDS)[5] as soon as possible but not later than _______________ [1] 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>72.216</u> and 73.71. [2] These Emergency Classes are addressed in Appendix E of this part. [3] Commercial telephone number of the NRC Operations Center is (301) 816-5100." [4] Requirements for ERDS are addressed in Appendix E, Section VI. **(Continued on next page)**	*There is no requirement in § 50.73 to report the declaration of an Emergency Class. However, an event or condition that leads to declaration of an Emergency Class may meet one or more of the specific reporting requirements that are in § 50.73.* *There is usually a parallel reporting requirement in § 50.73 that captures a non-emergency event that is reportable under § 50.72. Exceptions are: a press release; notification to another government agency; transport of a contaminated person offsite; and loss of emergency preparedness capability.*

§ 50.72(a)(4) (Continued)	
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)(1) of this section, the licensee shall identify: (i) The Emergency Class declared; or (ii) Paragraph (b)(1), 'One-hour reports,' paragraph (b)(2) 'Four-hour reports,' or paragraph (b)(3), 'Eight-hour reports,' as the paragraph of this section requiring notification of the non-emergency event."	

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.[7]

[7] 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 Reports

§ 50.72	§ 50.73(a)(1)
There is no comparable passage in § 50.72.	"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 <u>60 days</u> after the discovery of the event. <u>In the case of an invalid actuation reported under § 50.73(a)(2)(iv), other than actuation of the reactor protection system (RPS) when the reactor is critical, 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."

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)(2)(i)	§ 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. <u>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.)</u>

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

§ 50.72	§ 50.73(a)(2)(i)(B)
There is no corresponding requirement in § 50.72.	"Any operation or condition which was prohibited by the plant's Technical Specifications except when: *(1)* The Technical Specification is administrative in nature; *(2)* The event consisted solely of a case of a late surveillance test where the oversight was corrected, the test was performed, and the equipment was found to be capable of performing its specified safety functions; or *(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."

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. The NRC expects licensees to include violations of the Technical Specifications in their corrective action programs, which are subject to NRC audit.

Discussion[8]

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.

[8] 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.)

<u>Technical Specification Surveillance Testing</u>

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) <u>For testing that is conducted within the required time (i.e., the surveillance interval plus any allowed extension),</u> 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) <u>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.</u>

<u>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.</u>

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. 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 generally reportable under this criterion~~ is not necessarily reportable under this criterion. However, it should be considered reportable under this criterion if the condition is not corrected within an hour, such that it is necessary to initiate actions to shutdown, cool down, etc.

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 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)
"... any deviation from the plant's Technical Specifications authorized pursuant to § 50.54(x) of this part."	" Any deviation from the plant's Technical Specifications authorized pursuant to § 50.54(x) of this part."

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)(3)(ii)	§ 50.73(a)(2)(ii)
"Any event or condition that results in: **(A)** The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or **(B)** The nuclear power plant being in an unanalyzed condition that significantly <u>degrades</u> plant safety." ~~In a condition that is outside the design basis of the plant; or~~ ~~In a condition not covered by the plant's operating and emergency procedures.~~"	"**(a)(2)(ii)** Any event or condition that resulted in: **(A)** The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; **(B)** The nuclear power plant being in an unanalyzed condition that significantly <u>degraded</u> plant safety." ~~In a condition that was outside the design basis of the plant; or~~ ~~In a condition not covered by the plant's operating and emergency procedures.~~

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 required under § 50.72(b)(3) *[an 8-hour report]*.

In addition, an LER is required for an event or condition that required corrective action for a single cause or condition in order to ensure the ability of more than one train or channel to perform its specified safety function.

Discussion

<u>*(A) Nuclear power plant, including its principal safety barriers, being seriously degraded:*</u>

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). <u>Abnormal degradation of a barrier may be indicated by the necessity of taking corrective action to restore the barrier's capability, as is the case in some of the examples discussed below. Abnormal stress upon a barrier may result from an unplanned transient, as is the case in one of the examples discussed below.</u> Examples of reportable events and conditions are:

(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) <u>Serious steam generator tube degradation. Steam generator tube degradation is considered serious if the tubing fails to meet the following two performance criteria:</u>

   (a) <u>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.</u>

   (b) <u>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.</u>

(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.[9]

<u>(B) Unanalyzed condition that significantly affects plant safety:</u>

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

[9] The LCO typically employs La, which is defined in Appendix J to 10 CFR Part 50 as the maximum allowable containment leak rate at pressure Pa, 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.

condition. However, these events should be reported only if they involve functionally related components or if they significantly compromise plant safety.[10]

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.[11]

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.[12]

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.[13]

The level of significance of these cases generally corresponds to the inability to perform a required safety function. For instance, accumulation of voids that could inhibit the ability to adequately remove heat from the reactor core, particularly under natural circulation conditions, has an effect similar to a condition that could prevent the fulfillment of the safety function of the auxiliary feedwater system.

Beyond the examples given in 1983, an example of an event reportable as ~~a condition outside the design basis of the plant~~ an unanalyzed condition that significantly degraded plant safety would be the 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.

Examples

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

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[10] 48 FR 39042, August 29, 1983 and 48 FR 33856, July 26, 1983.

[11] 48 FR 39042, August 29, 1983.

[12] 48 FR 39042, August 29, 1983 and 48 FR 33856, July 26, 1983.

[13] 48 FR 39042, August 29, 1983 and 48 FR 33856, July 26, 1983.

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 RCS 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

§ 50.72	§ 50.73(a)(2)(iii)
The corresponding requirement in § 50.72 has been deleted. *Refer to the plant's* ***Emergency Plan*** *regarding declaration of an Emergency Class.*	"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

This criterion applies 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 System Actuation

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§ 50.72(b)(2)(iv)

"**(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 <u>except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation</u>.

(B) Any event or condition that results in actuation of <u>the reactor protection system (RPS) when the reactor is critical</u> except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation."

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§ 50.72(b)(3)(iv)

"**(A)** Any event or condition that results in <u>valid</u> actuation of <u>any of the systems listed in paragraph (b)(3)(iv)(B) of this section</u> except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.

~~(B) The actuation is invalid and:~~
~~*(1)* Occurs while the system is properly removed from service;~~
~~*(2)* Occurs after the safety function has been already completed; or~~

~~*(3)* Involves only the following specific ESFs or their equivalent systems:~~
~~*(i)* Reactor water clean-up system;~~
~~*(ii)* Control room emergency ventilation system;~~
~~*(iii)* Reactor building ventilation system;~~
~~*(iv)* Fuel building ventilation system; or~~
~~*(v)* Auxiliary building ventilation system.~~

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§ 50.73(a)(2)(iv)

"**(A)** Any event or condition that resulted in manual or automatic actuation of <u>any of the systems listed in paragraph (a)(2)(iv)(B) of this section</u>,
except when:
(1) The actuation resulted from and was part of a pre-planned sequence during testing or reactor operation; or

(2) The actuation was invalid and;
(i) Occurred while the system was properly removed from service; or
(ii) Occurred after the safety function had been already completed.

~~*(3)* Involved only the following specific ESFs or their equivalent systems:~~
~~*(i)* Reactor water clean-up system;~~
~~*(ii)* Control room emergency ventilation system;~~
~~*(iii)* Reactor building ventilation system;~~
~~*(iv)* Fuel building ventilation system; or~~
~~*(v)* Auxiliary building ventilation.~~

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§ 50.72(b)(3)(iv) (continued)	§ 50.73(a)(2)(iv) (continued)
(B) The systems to which the requirements of paragraph (b)(3)(iv)(A) of this section apply are: *(1)* Reactor protection system (RPS) including: reactor scram and reactor trip.[5] *(2)* General containment isolation signals affecting containment isolation valves in more than one system or multiple main steam isolation valves (MSIVs). *(3)* Emergency core cooling systems (ECCS) for pressurized water reactors (PWRs) including: high-head, intermediate-head, and low-head injection systems and the low pressure injection function of residual (decay) heat removal systems. *(4)* ECCS for boiling water reactors (BWRs) including: high-pressure and low-pressure core spray systems; high-pressure coolant injection system; low pressure injection function of the residual heat removal system. *(5)* BWR reactor core isolation cooling system; isolation condenser system; and feedwater coolant injection system. *(6)* PWR auxiliary or emergency feedwater system. *(7)* Containment heat removal and depressurization systems, including containment spray and fan cooler systems. *(8)* Emergency ac electrical power systems, including: emergency diesel generators (EDGs); hydroelectric facilities used in lieu of EDGs at the Oconee Station; and BWR dedicated Division 3 EDGs. [5] Actuation of the RPS when the reactor is critical is reportable under paragraph (b)(2)(iv) of this section.	**(B)** The systems to which the requirements of paragraph (a)(2)(iv)(A) of this section apply are: *(1)* Reactor protection system (RPS) including: reactor scram or reactor trip. *(2)* General containment isolation signals affecting containment isolation valves in more than one system or multiple main steam isolation valves (MSIVs). *(3)* Emergency core cooling systems (ECCS) for pressurized water reactors (PWRs) including: high-head, intermediate-head, and low-head injection systems and the low pressure injection function of residual (decay) heat removal systems. *(4)* ECCS for boiling water reactors (BWRs) including: high-pressure and low-pressure core spray systems; high-pressure coolant injection system; low pressure injection function of the residual heat removal system. *(5)* BWR reactor core isolation cooling system; isolation condenser system; and feedwater coolant injection system. *(6)* PWR auxiliary or emergency feedwater system. *(7)* Containment heat removal and depressurization systems, including containment spray and fan cooler systems. *(8)* Emergency ac electrical power systems, including: emergency diesel generators (EDGs); hydroelectric facilities used in lieu of EDGs at the Oconee Station; and BWR dedicated Division 3 EDGs. *(9)* Emergency service water systems that do not normally run and that serve as ultimate heat sinks.

Discussion

An event involving a valid ECCS signal, or a critical scram, is reportable under § 50.73(a)(2)(iv) *[a 4-hour report]* unless the actuation resulted from and was part of a pre-planned sequence.

A valid actuation of any of the systems named in § 50.72(b)(3)(iv)(B) is reportable under § 50.72(b)(3)(iv)(A) *[an 8-hour report]* unless the actuation resulted from and was part of a pre-planned sequence during testing or reactor operation.

An actuation of any of the systems named in § 50.73(a)(2)(iv)(B) is reportable under § 50.73(a)(2)(iv)(A) *[a 60-day report]* unless the actuation resulted from and was part of a pre-planned sequence during testing or reactor operation or the actuation was invalid and occurred while the system was properly removed from service or occurred after the safety function had been already completed. As indicated in § 50.73(a)(1), in the case of an invalid actuation reported under § 50.73(a)(2)(iv)(A) other than actuation of the reactor protection system (RPS) when the reactor is critical 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. In these cases the telephone report:

(1) Is not considered an LER.

(2) Should identify that the report is being made under § 50.73(a)(2)(iv)(A).

(3) Should provide the following information:

(a) The specific train(s) and system(s) that were actuated.

(b) Whether each train actuation was complete or partial.

(c) Whether or not the system started and functioned successfully.

These paragraphs require events to be reported whenever one of the specified systems 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.

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).

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 system 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.

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 under these paragraphs as well as under 10 CFR 50.72(b)(3)(v) and 10 CFR 50.73(a)(2)(v) (event or condition that could have prevented the fulfillment of the safety function of ....).

With regard to preplanned actuations, 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 actuation 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.

Except for critical scrams, 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.

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.

  An ENS notification and LER are both required 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.

- 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. Both an ENS notification and an LER are 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. The event is reportable because the EDG auto-start 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. The event is reportable 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 scrammed.

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.

(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).~~

(6) Reactor Water Cleanup (RWCU) Isolation

An RWCU primary containment isolation occurred on pressurization between the RWCU suction containment isolation valves, as designed to isolate a pipe break. It is a valid signal because this is the safety function of the containment isolation system. Regardless, the event is not reportable because the signal did not affect containment isolation valves in multiple systems.

(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~~ actuations prior to start of work. During the event, a loss of continuity did occur and the ~~ESF~~ actuations 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 actuations were not valid. It is reportable under § 50.73(a)(2)(iv) because the actuations were not listed as (and were not) definitely expected to occur.

3.2.7 Event or Condition That Could Have Prevented Fulfillment of a Safety Function

§ 50.72(b)(3)(v)	§ 50.73(a)(2)(v)
"Any event or condition that ~~alone~~ at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident."	"Any event or condition that ~~alone~~ could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident."
§ 50.72(b)(3)(vi)	**§ 50.73(a)(2)(vi)**
"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 paragraph (b)(3)(v) of this section if redundant equipment in the same system was operable and available to perform the required safety function."	"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 paragraph (a)(2)(v) of this section if redundant equipment in the same system was operable and available to perform the required safety function."

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.~~"[14]~~

~~"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").~~"[15]~~

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

~~[14] 48 FR 33854 and 48 FR 33858, July 26, 1983.~~

~~[15] 48 FR 33854 and 48 FR 33858, July 26, 1983.~~

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.~~[16]~~

- ~~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~~

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

~~[16] 48 FR 33854, July 26, 1983.~~

- 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.~~[17]~~

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

~~[17] 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) <u>Contaminated Hydraulic Fluid Degrades MSIV Operation</u>

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 <u>under 50.73(a)(2)(v)</u> because ~~a single~~ <u>the</u> 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~~. <u>The event is not reportable under 50.72(b)(3)(v) because, at the time of discovery, the plant was shutdown and the MSIV's were not required to be operable.</u>

(10) <u>Diesel Generator Lube Oil Fire Hazard</u>

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.

<u>OTHER CONDITIONS</u>

(14) <u>Conditions Observed While System Out of Service</u>

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) <u>Diesel Generator Bearing Problems</u>

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 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) <u>Multiple Control Rod Failures</u>

There have been cases in which licensees have <u>erroneously concluded that</u> ~~not reported multiple,~~ sequentially discovered failures of systems or components occurring during planned testing <u>are not reportable</u>. 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)(3)(v) and 50.73(a)(2)(v) [event or condition that 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 Inoperability of Independent Trains or Channels

§ 50.72	§ 50.73(a)(2)(vii)
There is no corresponding requirement in § 50.72.	"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: (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."

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 Radioactive Release

§ 50.72	§ 50.73(a)(2)(viii)
The corresponding requirement in § 50.72 has been deleted. *Refer to the plant's* ***Emergency Plan*** *regarding declaration of an Emergency Class.* *Refer to* ***§ 50.72(b)(2)(xi)*** *below regarding a news release or notification of another agency.* *Refer to* ***§ 20.2202*** *regarding events reportable under that section.*	"(A) Any airborne radioactivity 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. (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." ~~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.~~

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) <u>Unmonitored Release of Contaminated Steam Through Auxiliary Boiler Atmospheric Vent</u>

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 E-5 µCi/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) <u>Unplanned Gaseous Release</u>

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 E-5 µCi/ml of Kr-85 and 5 E-6 µCi/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)
The corresponding requirement in § 50.72 has been deleted. *Refer to the plant's* ***Emergency Plan*** *regarding declaration of an Emergency Class.*	"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."

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 criterion for external threats, § 50.73(a)(2)(iii), is 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)(i) as discussed in Section 3.1.1 of this report.[18] 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.[19]

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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[18] 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.

[19] 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 Transport of a Contaminated Person Offsite

§ 50.72(b)(3)(xii)	**§ 50.73**
"Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment."	*There is no corresponding requirement in § 50.73.*

If not reported under § 50.72(a), (b)(1), or (b)(2), an ENS notification is required under (b)(3) *[an 8-hour report]* 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

<u>Radioactively Contaminated Person Transported Offsite for Medical Treatment</u>

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

§ 50.72(b)(2)(xi)	§ 50.73
"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."	*There is no corresponding requirement in § 50.73.*

If not reported under § 50.72(a) or (b)(1), licensees are required to notify the NRC via the ENS under (b)(2) *[a 4-hour report]*.

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 <u>not</u> 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 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.

Some plants provide a State incident response facility with alarm indication coincident with control room alarms, e.g., an effluent radiation monitor alarm. However, an alarm received at a State facility is in itself not a requirement for notifying the NRC under this criterion. A release is reportable under this criterion if a press release is planned or a specific report (beyond the automatic alarm indication) has been or will be made to a State agency.

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 planned.

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

§ 50.72(b)(3)(xiii)	§ 50.73
"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)."	*There is no corresponding requirement in § 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[20], 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

[20] 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.

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.

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.

3.2.14 Single Cause that Could Have Prevented Fulfillment of the Safety Functions of Trains or Channels in Different Systems

§ 50.72	**§ 50.73(a)(2)(ix)**
There is no corresponding requirement in § 50.72.	(A) Any event or condition that as a result of a single cause could have prevented the fulfillment of a safety function for two or more trains or channels in different systems that are needed to: *(1)* Shut down the reactor and maintain it in a safe shutdown condition; *(2)* Remove residual heat; *(3)* Control the release of radioactive material; or *(4)* Mitigate the consequences of an accident. (B) Events covered in paragraph (ix)(A) of this section may include cases of procedural error, equipment failure, and/or discovery of a design, analysis, fabrication, construction, and/or procedural inadequacy. However, licensees are not required to report an event pursuant to paragraph (ix)(A) of this section if the event results from: *(1)* A shared dependency among trains or channels that is a natural or expected consequence of the approved plant design; or *(2)* Normal and expected wear or degradation."

An LER is required for an event that meets the conditions stated in the rule.

Discussion

Subject to the two exclusions stated in the rule, this criterion captures those events where a single cause could have prevented the fulfillment of the safety function of multiple trains or channels, but the event:

(1) Would not be captured by §§ 50.73(a)(2)(v) and 50.72(b)(3)(v) [event or condition that could have prevented fulfillment of the safety function of structures and systems needed to ...] because the affected trains or channels are in different systems; and

(2) Would not be captured by § 50.73(a)(2)(vii) [common cause inoperability of independent trains or channels] because the affected trains or channels are either:

  (a) Not assumed to be independent in the plant's safety analysis; or

  (b) Not both considered to be inoperable.

This criterion is closely related to §§ 50.73(a)(2)(v) and 50.72(b)(3)(v) [event or condition that could have prevented fulfillment of the safety function of structures and systems needed to: shut down the reactor and maintain it in a safe shutdown condition; remove residual heat; control the release of radioactive material; or mitigate the consequences of an accident]. Specifically:

- The meaning of the term "could have prevented the fulfillment of the safety function" is essentially the same for this criterion as it is for §§ 50.73(a)(2)(v) and 50.72(b)(3)(v) [i.e., there was a reasonable expectation of preventing the fulfillment of the safety function(s) involved]. However, in contrast to §§ 50.73(a)(2)(v) and 50.72(b)(3)(v), reporting under this criterion applies to trains or channels in different systems. Thus, for this criterion, the safety function that is affected may be different in different trains or channels.

- In contrast to §§ 50.73(a)(2)(v) and 50.72(b)(3)(v), reporting under this criterion applies only to a single cause. Also, in contrast to §§ 50.73(a)(2)(v) and 50.72(b)(3)(v), this criterion does not apply to an event that results from a shared dependency among trains or channels that is a natural or expected consequence of the approved plant design. For example, this criterion does not capture failure of a common electrical power supply that disables Train A of AFW and Train A of HPSI, because their shared dependency on the single power supply is a natural or expected consequence of the approved plant design.

- Similar to §§ 50.73(a)(2)(v) and 50.72(b)(3)(v), this criterion does not capture events or conditions that result from normal and expected wear or degradation. For example, consider pump bearing wear that is within the normal and expected range. In the case of two pumps in different systems, this criterion categorically excludes normal and expected wear. In the case of two pumps in the same system, normal and expected wear should be adequately addressed by normal plant operating and maintenance practices and thus should not indicate a reasonable expectation of preventing fulfillment of the safety function of the system.

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, 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.

The intent of this criterion is to capture those events where, as a result of a single cause, there would have been a failure of two or more trains or channels to properly complete their safety function, regardless of whether there was an actual demand. For example if, as a result of a single cause, a train of the high pressure safety injection system and a train of the auxiliary feedwater system failed, the event would be reportable even if there was no demand for the systems' safety functions.

Examples of a single cause responsible for a reportable event may include cases of procedural error, equipment failure, and/or discovery of a design, analysis, fabrication, construction, and/or procedural inadequacy. They may also include such factors as high ambient temperatures, heat up from energization, inadequate preventive maintenance, oil contamination of air systems, incorrect lubrication, or use of non-qualified components.

The event is reportable if, as a result of a single cause, there would have been a failure of two or more trains or channels to properly complete their safety function, regardless of whether the problem was discovered in both trains at the same time.

Trains or channels for reportability purposes are defined as those trains or channels designed to provide protection against single failures. Many systems containing active components are designed as at least a two-train system. Each train in a two-train system can normally satisfy all the system functions.

This criterion does not include those cases where trains or channels are removed from service as part of a planned evolution, in accordance with the plant's technical specifications. For example, if a licensee removes two trains from service to perform maintenance, and the Technical Specifications permit the resulting configuration, and the trains are returned to service within the time limits specified in the Technical Specifications, the action need not be reported under this paragraph. However, if, while the trains or channels are out of service, the licensee identifies a single cause that could have prevented the trains from performing their safety functions (e.g., the licensee finds a set of relays that is wired incorrectly), that condition must be reported.

The definition of the systems included in the scope of this criterion is provided in the rule itself. It includes systems required by the technical specifications to be operable to perform one of the four functions specified in the rule. It is not determined by the phrases "safety-related," "important to safety," or "ESF."

Trains or channels must operate long enough to complete their intended safety functions as defined in the safety analysis report.

Generic Letter 91-18 provides guidance on determining whether a system is operable.

The application of this reporting criterion and other reporting criteria involves the use of engineering judgment. In the case of this criterion, a technical judgment must be made as to whether a failure or operator action that did actually disable one train or channel, could have, but did not, disable another train or channel. If so, this would constitute an event that "could have prevented" the fulfillment of the safety function of multiple trains or channels, and, accordingly, must be reported.

Reporting is required if one train or channel fails and, as a result of a single cause, there is reasonable doubt that another train or channel would remain operational until it completed its safety function or is repaired. For example, if a pump fails because of improper lubrication, and engineering judgment indicates that there is a reasonable expectation that another pump in a different system, which was also improperly lubricated, would have also failed before it completed its safety function, then the event is reportable under this criterion.

<u>Reportable</u> conditions under this criterion include the following:

- an event or condition that disabled multiple trains because of a single cause

- an event or condition where one train is disabled; in addition, (1) the underlying cause that disabled one train of a system could have failed another train and (2) there is reasonable expectation that the second train would not complete its safety function if it were called upon to do so

- an observed or identified event or condition that could have prevented fulfillment of the safety function of multiple trains or channels as a result of a single cause

The following types of events or conditions generally are <u>not</u> reportable under this criterion:

- 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 defective component that was delivered, but not installed

- removal of trains or channels from service as part of a planned evolution for maintenance or surveillance testing when done in accordance with the plant's Technical Specifications (unless a condition is discovered that could have prevented multiple trains or channels from performing their safety functions)

- independent failure of a single component (unless it is indicative of a generic problem, which could have caused failure of multiple trains or channels)

- a procedure error that could have resulted in defeating the safety function of multiple trains or channels but was discovered before procedure approval

- 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 four safety functions in the rule

- a single stuck control rod that would not have prevented the fulfillment of a reactor shutdown

- unrelated component failures in different trains or channels

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 criterion.

A design or analysis defect or deviation is reportable under this criterion if it could have prevented fulfillment of the safety function of multiple trains or channels. 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(s) of multiple trains or channels. Alternatively stated, the condition is reportable if there was reasonable doubt that the safety functions of multiple trains or channels would have been fulfilled if there were demands for them.

Examples

(1) Solenoid Operated Valve Deficiency

During testing, two containment isolation valves failed to function as a result of improper air gaps in the solenoid operated valves that controlled the supply of instrument air to the containment isolation valves.

The valves were powered from the same electrical division. Thus, § 50.73(a)(2)(vii) [common cause inoperability of independent trains or channels] would not apply. The two valves isolated fluid process lines in two different systems. Thus § 50.73(a)(2)(v) [condition that could have prevented fulfillment of the safety function of a structure or system] would apply only if engineering judgment indicates there was a reasonable expectation of preventing fulfillment of the safety function for redundant valves within the same system.[21] However, this criterion would certainly apply if a single cause (such as a design inadequacy) induced the improper air gaps, thus preventing fulfillment of the safety function of two trains or channels in different systems.

(2) Degraded Valve Stems

A motor operated valve in one train of a system was found with a crack 75 percent through the stem. Although the valve stem did not fail, engineering evaluation indicated that further cracking would occur which could have prevented fulfillment of its safety function. As a result, the train was not considered capable of performing its specified safety function. The valve stem was replaced with a new one.

The root cause was determined to be environmentally assisted stress corrosion cracking which resulted from installation of an inadequate material some years earlier. The same inadequate material had been installed in a similar valve in a different system at the same time. The similar valve was exposed to similar environmental conditions as the first valve.

The condition is reportable under this criterion if engineering judgment indicates that there was a reasonable expectation of preventing fulfillment of the safety function of both affected trains. This depends on details such as whether the second valve stem was also significantly degraded and, if not, whether any future degradation of the second valve stem would have been discovered and corrected, as a result of routine maintenance programs, before it could become problematic.

(3) Overpressure due to Thermal Expansion

It was determined that a number of liquid-filled and isolated containment penetration lines in multiple safety systems were not adequately designed to accommodate the internal pressure buildup that could occur because of thermal expansion caused by heatup after a design basis accident. The problem existed because the original design failed to consider this effect following a postulated accident.

[21] Or, alternatively, there was reasonable doubt that the safety function would have been fulfilled if the affected trains had been called upon to perform them.

The condition is reportable under this criterion because there was a reasonable expectation of preventing fulfillment of the safety function of multiple trains or channels as a result of a single cause.

(4) Cable Degradation

One of three component cooling water pumps tripped due to a ground fault on a power cable leading to the pump. The likely cause was determined to be moisture permeation into the cable insulation over time in a section of cable that was exposed to water.

The event is reportable under this criterion if engineering judgment indicates that there was a reasonable expectation of preventing fulfillment of the safety function of an additional train in a different system as a result of the same cause. For example, if cable testing indicates that another cable to safety related equipment was likely to fail as a result of the same cause the event is reportable.

(5) Overstressed Valve Yokes

It was determined that numerous motor operated valve yokes experienced over thrusting that exceeded design basis stress levels. The cause was lack of knowledge that resulted in inadequate design engineering at the time the designs were performed.

Some of the motor operated valve yokes, in different systems, were being over stressed enough during routine operations that, although they were currently capable of performing their specified safety functions, the over stressing would, with the passage of time, render them incapable of performing those functions. The condition is reportable under this criterion if engineering judgment indicates there was a reasonable expectation of preventing fulfillment of the safety function of trains or channels in two or more different systems.[22]

(6) Heat Exchanger Fouling

Periodic monitoring of heat exchanger performance indicated that two heat exchangers in two different systems required cleaning in order to ensure they would remain operable. The degree of fouling was within the range of normal expectations upon which the monitoring and maintenance procedures were based.

The event is not reportable under this criterion because there was not a reasonable expectation of preventing the fulfillment of the safety function of the heat exchangers.

(7) Pump Vibration

Based on increasing vibration trends, identified by routine vibration monitoring, it was determined that a pump's bearings required replacement. Other pumps in different systems with similar designs and service histories experience similar bearing degradation.

[22] Or, alternatively, there was reasonable doubt that the safety function would have been fulfilled if the affected trains had been called upon to perform them.

However, it is expected that the degradation will be detected and corrected before failure occurs.

Such bearing degradation is not reportable under this criterion because it is normal and expected.

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)	**§ 50.73**
"*Followup Notification.* 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: (1) *Immediately report* (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 (ii) any change from one Emergency Class to another, or (iii) a termination of the Emergency Class. (2) *Immediately report* (i) the results of ensuing evaluations or assessments of plant conditions, (ii) the effectiveness of response or protective measures taken, and (iii) information related to plant behavior that is not understood. (3) Maintain an open, continuous communication channel with the NRC Operations Center upon request by the NRC."	*There is no corresponding requirement in § 50.73.*

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) Recording

The NRC 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. <u>A retracted ENS report is retained in the ENS data base, along with the retraction.</u> 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)
"**Submission of reports.** 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 § 50.4."

An LER is to be submitted (mailed) within ~~30~~ 60 days of the discovery date. If a ~~30~~ 60-day period ends on a Saturday, Sunday, or holiday, reports submitted on the first working day following the end of the ~~30~~ 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 5.2.7 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[23], 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. <u>Include safeguards and security information only in the narrative and not in the abstract</u>. 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. <u>Include proprietary information only in the narrative and not in the abstract</u>. 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

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[23] 56 FR 36081, July 31, 1991.

~~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.~~

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, 4.2×10^{-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 ~~30~~ 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.[24] 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

[24] 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.

determined to have been caused by deficient procedures or inadequate personnel training, this should be explained.

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: "The Energy Industry Identification System component function identifier and system name of each component or system referred to in the LER.

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

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

(3) 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 in the Two White Flint North Building, 11545 Rockville Pike, Rockville, Maryland; and at the Office of the Federal Register, 1100 L Street, NW, Washington, DC."

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 (EIIS) 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 EIIS 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: "For each human performance related root cause, the licensee shall discuss the cause(s) and circumstances."

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

~~(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).~~

~~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 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 EIIS 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.

Event Year		Sequential Report Number		Revision Number
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 ∅∅5∅∅∅XXX 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 EIIS.

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.

NRC FORM 366 (MM-YYYY) U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES MM-YYYY
LICENSEE EVENT REPORT (LER) (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)	PAGE (3)
	05000	1 O

TITLE (4)

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER 05000
				–	–				FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)			
POWER LEVEL (10)		20.2201(b)	20.2203(a)(3)(i)	50.73(a)(2)(i)(C)	50.73(a)(2)(vii)
		20.2201(d)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(A)
		20.2203(a)(1)	20.2203(a)(4)	50.73(a)(2)(ii)(B)	50.73(a)(2)(viii)(B)
		20.2203(a)(2)(i)	50.36(c)(1)(i)(A)	50.73(a)(2)(iii)	50.73(a)(2)(ix)(A)
		20.2203(a)(2)(ii)	50.36(c)(1)(ii)(A)	50.73(a)(2)(iv)(A)	50.73(a)(2)(x)
		20.2203(a)(2)(iii)	50.36(c)(2)	50.73(a)(2)(v)(A)	73.71(a)(4)
		20.2203(a)(2)(iv)	50.46(a)(3)(ii)	50.73(a)(2)(v)(B)	73.71(a)(5)
		20.2203(a)(2)(v)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(C)	OTHER
		20.2203(a)(2)(vi)	50.73(a)(2)(i)(B)	50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)	
NAME	TELEPHONE NUMBER (Include Area Code)

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MO	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).		**NO**				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) **(16)**

NRC FORM 366 (MM-YYYY)

REQUIRED NUMBER OF DIGITS/CHARACTERS FOR EACH BLOCK

BLOCK NUMBER	NUMBER OF DIGITS/CHARACTERS	TITLE
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

NRC FORM 366A **U.S. NUCLEAR REGULATORY COMMISSION**
(MM-YYYY)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
	05000		--	--	OF

TEXT *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

NRC FORM 366A (MM-YYYY)

NRC FORM 366B **U.S. NUCLEAR REGULATORY COMMISSION**
(MM-YYYY)

LICENSEE EVENT REPORT (LER)
FAILURE CONTINUATION

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
	05000		--	--	OF

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

NRC FORM 366B (MM-YYYY)

Attachment 4

ACRS Memorandum

ACRSR-1879

March 13, 2000

MEMORANDUM TO: William D. Travers
Executive Director for Operations

/s/

FROM: John T. Larkins, Executive Director
Advisory Committee on Reactor Safeguards

SUBJECT: PROPOSED FINAL AMENDMENT TO 10 CFR 50.72, "IMMEDIATE NOTIFICATION REQUIREMENTS FOR OPERATING NUCLEAR POWER REACTORS," AND 10 CFR 50.73, "LICENSEE EVENT REPORT SYSTEM"

During the 470th meeting of the Advisory Committee on Reactor Safeguards, March 1-4, 2000, the Committee heard a status report concerning the proposed final amendment to 10 CFR 50.72 and 50.73. The Committee had reviewed and commented on a previous draft of the proposed amendment during the 460th ACRS meeting on March 10-13, 1999. During its 469th meeting, February 3-5, 2000, the Committee reviewed the proposed final amendment. Subsequently, the Committee has decided not to comment further on this matter.

<u>References</u>:

(1) ACRS 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 Operations, 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, Office of Nuclear Reactor Regulation, NRC, 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: A. Vietti-Cook, SECY
J. Blaha, OEDO

W. Ott, OEDO
S. Collins, NRR
D. Matthews, NRR
C. Carpenter, NRR
D. Allison, NRR