

BWR OWNERS' GROUP

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

Attention: David L. Meyer, Chief
Rules, Review and Directives Branch

D. Allison
59 FR 5614
2/7/94 (7)

Subject: **BWROG COMMENTS ON NUREG-1022 REVISION 1 (SECOND DRAFT)**

The BWR Owners' Group (BWROG) appreciates the opportunity to provide comments on the second draft of NUREG-1022 Revision 1, "Event Reporting Guidelines, 10CFR 50.72 and 50.73" (59 Federal Register 5614, February 7, 1994).

The BWROG shares a common goal with the NRC to provide reporting guidance that promotes consistent reporting and addresses the issues identified in the 1989 Regulatory Impact Survey (namely, inconsistent application of reporting requirements, and informal lowering of reporting thresholds). It is apparent from our review that the NRC has devoted considerable time and effort to address the public comments on the first draft of NUREG-1022 Revision 1. The second draft represents a substantial improvement over the first draft and in most aspects is satisfactory.

During our review, the BWROG has had individuals with a great deal of knowledge and experience in applying the reporting rules incorporate their expertise in the BWROG comments. Provided below are general comments on the draft NUREG. Attached are specific comments including mark-ups of the draft NUREG.

Voluntary Reporting

The BWROG recognizes that voluntary licensee event reports (LERs) are acceptable and encouraged by the NRC. Indeed, voluntary LERs have long been a part of the LER process (see the Statement of Considerations for 10 CFR 50.73). The industry has submitted and will continue to submit voluntary LERs in appropriate situations, especially if the information may be of safety significance to the rest of the industry. It is proper for the draft NUREG to discuss voluntary reporting within the context of the existing rules, and the discussion in the Foreword and in Section 2.9 clearly communicates the NRC's encouragement of continued voluntary reporting. These sections also provide adequate guidance and applicable reporting criteria. However, we are concerned that the specific discussions of what the Staff "requests" be voluntarily reported, in particular the discussion in Section 3.3.2, suggest that such reporting, though "voluntary", is expected.

The BWROG recognizes the Staff's interest in voluntary reporting of certain systems not identified as engineered safety features for all plants. However, some plants may choose to submit a voluntary

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LER, in this or other contexts, whereas others may legitimately decide otherwise. We are therefore concerned that the goal of eliminating informal lowering of reporting thresholds may not be achieved through this guidance in the NUREG. It is recommended, as reflected in the Foreword and Section 2.9, that utilities continue to provide voluntary reports based primarily on their judgment as to the safety significance of the event and the potential benefits of sharing important operating experience. Specific references to voluntary reporting outside of these generic discussions should be eliminated. Related comments are provided in the mark-up.

Operating Plant in a Degraded or Unanalyzed Condition

Some aspects of the discussion in Section 3.2.4 do not provide the detail needed to properly apply this reporting criterion. For example, the quotation from the Statement of Considerations in part (2) on pages 36-37 does not of itself provide a sufficient level of guidance. Part (3) on page 37, while based on the definition of "design basis" with respect to systems, structures and components as provided in 10 CFR 50.2, also needs additional detail regarding the application of that definition toward overall plant conditions. These sections should be revised before the NUREG is issued.

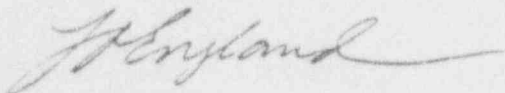
Summary

The BWROG reiterates its appreciation for the Staff's efforts to date and the degree to which the NRC has involved the public in the preparation of the proposed NUREG revision. Notwithstanding the apparent extent of our comments in the mark-up, we believe that a guidance document that satisfies our mutual goals is within reach.

Please contact either Henry Hegrat (BWROG LER Committee Chairman, 216-280-5606), Bill Zarbis (GE, BWROG Projects, 408-925-5070) or the undersigned if you have any questions.

The comments/positions provided in this letter have been endorsed by a substantial number of the members of the BWROG; however, they should not be interpreted as a commitment by any individual member to a specific course of action. Each member must formally endorse the BWROG position for that position to become that member's position.

Very truly yours,



L. A. England, Chairman
BWR Owners' Group

WAZ/LAE/waz
Attachments

cc: R. A. Pinelli, BWROG Vice Chairman
BWROG Primary Representatives
BWROG LER Committee

J. Eaton, NEI
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ATTACHMENT:

EXPLANATION OF BWROG COMMENTS

The draft NUREG revision has been marked-up to reflect specific changes recommended by the BWROG. Each mark-up is numbered to provide a cross-reference to the discussion below. Typographical errors noted during the BWROG review are indicated in the draft NUREG with an "X".

(1) Page ix

The additional guidance regarding non-enforceability of voluntary reports should be provided to licensees as well as the Staff, to provide a ready reference.

(2) Pages xi and 2

A change to the draft NUREG is not required, but it should be noted that the 1990 survey identified other issues to be addressed that are not resolved by the draft NUREG revision. Additional reduction in unnecessary regulatory burden needs to be addressed through rulemaking initiatives.

(3) Page 12

Clarification. It may not always be possible to report all failures within 30 days in one LER (for example, in the worst case, suppose an apparently related failure occurs on day 29 of the reporting period - it would not be possible to complete the necessary evaluations in time to include it in the same LER).

(4) Page 12

Clarification. Such discrepancies are not necessarily reported but are evaluated for reportability.

(5) Page 12

The BWROG recognizes the Staff's interest in voluntary reporting of certain systems not identified as engineered safety features for all plants. However, some plants may choose to submit a voluntary LER, in this or other contexts, whereas others may legitimately decide otherwise. It is recommended, as reflected in the Foreword and Section 2.9, that utilities continue to provide voluntary reports based primarily on their judgment as to the safety significance of the event and the potential benefits of sharing important operating experience. Specific references to voluntary reporting outside of these generic discussions should be eliminated.

- (6) Pages 13 and 14

This section should be deleted from Section 2.7. Section 2 addresses various aspects of reporting issues which, in all other cases, are general in nature and do not address the reportability of a specific event. As such, the reportability of a specific technical issue is not appropriate in this section. If necessary, these discussions would be properly addressed in the appropriate subsection(s) of Section 3 for the relevant reporting criterion (criteria).

- (7) Page 15

The changes make the text consistent with the information in pages 98 and 102.

- (8) Pages 16 and 17

Clarification. The recommended changes provide the same guidance but in a more logical and concise manner.

- (9) Page 24 and 25

Whether or not the plant is restarted or returns to power is not part of process for determining reportability.

- (10) Pages 25 and in other places throughout the draft NUREG

As noted by the NRC, Revision 1 of NUREG-1022, when issued, will replace NUREG-1022 and its Supplements 1 and 2. The purpose of Revision 1, as also stated by the NRC, is to provide a single reference document for reporting guidelines. Thus any references to NUREG-1022 and its Supplements 1 and 2 should not be included in Revision 1.

- (11) Page 28

The paragraph should be deleted because it does not provide reporting guidance, but instead provides discussion of how to comply with Technical Specifications (TS).

- (12) Page 28

The sentence as written provides a too brief summary of Section 2.7, and should be replaced with a reference to Section 2.7 to ensure the complete guidance is understood and applied.

- (13) Page 28

Clarification.

(14) Page 29

The recommended changes provide additional clarification that is needed. As written, the guidance provided is confusing and does not provide the needed clarification regarding reportability of administrative TS violations.

(15) Page 29

This paragraph pertains to discussion of an example, and as such does not belong here. The example is also confusing. For instance, on page 29 the first paragraph under (5) describes the required number of personnel on shift as an administrative item, and the second paragraph states that administrative items are not reportable. However, the second paragraph also states that this condition is reportable.

(16) Page 29

The sections referenced appear to be incorrect. The proper sections of 10 CFR 20 should be referenced.

(17) Page 31

The guidance is very clear on this subject and so the example is not needed.

(18) Page 31

The discussion and examples provided in these paragraphs provide inadequate guidance for a licensee to determine reportability of an administrative Technical Specification violation.

(19) Page 35

The change is recommended to clarify that loss of a single valve by itself does not result in loss of the containment isolation or main steam isolation function. The redundant isolation valve must also be affected for the isolation function to be lost.

(20) Page 35

The information deleted is redundant, because satisfaction of IWB-3600 assures satisfaction of IWB-3410-1.

(21) Page 36

The paragraph as written is too broad and should be deleted. As stated, it appears that the loss of one isolation valve on a line would have to be reported, even if the isolation

function is not lost. The example also does not result in the plant being "seriously degraded" as stated in the rule.

(22) Pages 36 and 37

This section needs to be rewritten, as it is only a restatement of the Statement of Considerations and thus does not provide any additional guidance on determining reportability. The information provided does not provide the necessary level of guidance.

(23) Page 37

This section needs to be revised. While based on the definition of "design basis" with respect to systems, structures and components as provided in 10 CFR 50.2, it does not provide adequate detail regarding the application of that definition toward overall plant conditions.

To define "design basis of the plant," the definition of "design basis" from 10 CFR 50.2 should be applied to the plant level. Meeting the design basis of the plant means staying within the design basis of the principle safety barriers. The specific safety function performed by these principle safety barriers is the protection of public health and safety by limiting the release of radioactive material. The controlling parameter for each of the principle safety barriers is contained in each plant's Safety Analysis Report (SAR). Typical parameters may include:

- offsite dose;
- fuel clad temperature;
- fuel clad oxidation;
- hydrogen generation;
- core geometry;
- primary containment integrity; and
- reactor coolant pressure boundary integrity.

The specific value or range of values chosen for each controlling parameter along with final verification of principle safety barrier performance is contained in each plant's SAR.

(24) Page 37

Clarification. The recommended change clearly establishes that the train cannot perform its design function as stated in the preceding sentence.

(25) Page 41

The examples in Section 3.2.5 provide the necessary information and the reference to Section 3.2.8 is not needed. In addition, the definition of the phrase in Section 3.2.8 is not

applicable to external threats (for example, it refers to protective clothing and radiation work permits, which are not pertinent to external threats).

(26) Page 47

The recommended change provides agreement with the 8-hour criterion stated in the second full paragraph on page 47.

(27) Page 49

The references to specific time periods should not be stated here, because it implies a threshold of what is or is not acceptable. Instead, a general discussion should be provided of what is an acceptable period of time.

(28) Page 51

Using protective clothing or processing a radiation work permit do not constitute significant hampering.

(29) Page 51

The rule addresses only events which actually hampered site personnel, and hence the guidance should not address hypothetical occurrences.

(30) Page 52

The discussion indicating that control room fires that involve "any effect on plant systems" are reportable is too broad.

(31) Page 52

The guidance is confusing, because donning respiratory equipment may be simply a precautionary measure and thus should not be the factor for determining reportability.

(32) Page 54

The recommended changes provide the detail needed for proper guidance for determining reportability of similar occurrences.

(33) Page 56

While not included in the rule, the addition of "or" clarifies the meaning of the rule when stated in this format.

- (34) Pages 57 and 61

A diesel generator is not an ESF at all plants and for those plants the reporting requirements are not applicable to actuations of the diesel generator.

- (35) Pages 58 and 63

Use of the word "evolution" is substituted for consistency with other parts of Section 3.3.2.

- (36) Pages 58 and 63

Other acceptable means of documenting and communicating planned ESF actuations exist and have been used.

- (37) Page 58

Clarification.

- (38) Page 59

Voluntary reporting is already adequately addressed in Section 2.9, and so it is not necessary to specifically discuss it in Section 3.3.2. The discussion in Section 2.9 is applicable to all of the sections of this reporting guidance. The BWROG is aware of the NRC's special interest in voluntary reporting as it applies to Section 3.3.2, but believes that if the guidance specifically addresses voluntary reporting of certain items, a precedent will be set that in essence establishes a requirement for future reporting. Thus the discussion in Section 3.3.2 should be deleted, and it is better to explore other existing means of obtaining the desired information.

- (39) Pages 60 and 64

Table 2 and its references should be deleted from the guidance. The systems listed in Table 2 are not consistent with the definition of ESF provided in NUREG-0800. To base the inclusion of certain systems in Table 2 because in the past some licensees have reported them under this criterion inappropriately lowers the reporting threshold without proper consideration of the circumstances that led to the reports.

- (40) Page 60

Clarification. The recommended change makes the example correct and concise.

- (41) Page 60

Clarification. As written, the guidance is confusing.

- (42) Page 61

Clarification. The recommended change properly emphasizes that a component actuation is not necessarily reportable under this criterion.

- (43) Page 63

Editorial.

- (44) Page 64

It is recommended that Table 2 be deleted. If not, the recommended changes are needed to eliminate confusion. The identified portions of the table have no clear meaning.

- (45) Page 64

Only the low pressure coolant injection mode of the residual heat system part of the ECCS, and the recommended change makes this distinction.

- (46) Page 64

The "fan cooler system" is not part of the BWR.

- (47) Page 66

The recommended change is consistent with the statement of the rule, which specifically states "structures or systems." As noted in the fourth full paragraph on page 66, it is not necessary to assume an additional single failure, and therefore loss of only a single train would not prevent the system from fulfilling its safety function. This change also makes the guidance consistent with the Statement of Considerations quoted on page 67, which address functional capability, and the guidance provided at the top of page 68.

- (48) Pages 70 through 78

In this section, it is important for each example to identify which aspect of the reporting criterion applies (see examples 9 and 10).

- (49) Page 71

The examples improperly conclude that all systems contained in Technical Specifications perform the safety functions specified under this part of the rule. A significant number of Technical Specification functions are not required to shutdown the reactor, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident.

(50) Page 75

The recommended change makes this aspect of the example consistent with the reporting criterion.

(51) Page 75

The example is confusing. Adequate guidance addressing this event is already provided on page 67 (second paragraph of the Statement of Considerations).

(52) Page 76

Clarification. The recommended changes provide the needed guidance while removing the ambiguity of the use of the word "operable" in the example.

(53) Page 77

The example is confusing because it overlaps with the reporting criteria of 10 CFR Part 21.

(54) Page 77

The current example is confusing and should be replaced with the example provided.

(55) Page 79

The highlighted definition of "common cause failures" is too general, and the addition shown is recommended.

(56) Pages 83 and 84

The underlining should be added as in previous sections.

(57) Page 88

As stated, the guidance would make the licensee responsible for making a judgment regarding media interest that may be beyond the licensee's control and experience. The licensee is better equipped to make judgments on safety significance and notify the NRC on that basis.

(58) Page 88

The information deleted is already addressed by the fourth bullet on the top of page 88.

(59) Page 89

The example should be deleted because it is not consistent with the language and intent of the rule. A small fire does not relate to the health and safety of on-site personnel.

(60) Page 101

Saturday is also not a normal working day and is in the same category of Sundays and holidays. The change is also consistent with the language of 10 CFR 50.4(d).

(61) Page 103

A revised LER should not be required simply to note a change in the criterion used for determining reportability. Use of a revised LER should be reserved for presenting new or significant changes. Determination of the reporting criterion applicable can be a subjective decision and a revised LER should not be required if that decision is changed.

(62) Page 115

The recommended change makes the guidance consistent with the rule and is also consistent with the guidance provided on page 123.

(63) Page 116

The sentence provides a conclusion, and as such it is not appropriate to include it as guidance.

(64) Page 118

The forms are not two-sided.

MARK-UP WITH
BWROG COMMENTS

NUREG-1022
Rev. 1
Second Draft

Event Reporting Guidelines 10 CFR 50.72 and 50.73

Second Draft for Comment

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FOREWORD

This second draft of Revision 1 to NUREG-1022 is a result of considerable effort, on the part of NRC staff and public commenters, aimed at developing sound and useful reporting guidance within the scope of the existing reporting rules. It accommodates many, but not all of the comments that were provided by industry and staff.

The principles that underlie the existing rule and revised guidance are:

1. Report emergency conditions to State and local authorities and the NRC as quickly as possible to facilitate response and support.
2. Report plant-specific safety matters to facilitate NRC followup of corrective actions.
3. Report matters that may benefit other utilities, so that they can learn from the experience.

Consideration of these principles led to rejection of an industry comment which opposed guidance for "voluntary reporting." Based on the comments, certain specific guidance has been deleted. However, because a rule and guidance cannot foresee every circumstance it is important to articulate an industry and regulatory responsibility to report matters that may benefit health, safety, and security. In doing so, the NRC staff clearly understands the difference between an enforceable legal requirement and a matter of voluntary reporting. In order to underscore this point, additional guidance will be provided to the NRC staff regarding the non-enforceability of voluntary reports if and when the guidance contained in this Revision 1 becomes final.

licensees and

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The NRC staff provided comments strongly supporting the need for added guidance on reporting human performance aspects of events and conditions. Although the statement of considerations for 50.73 specifically addresses reporting of causes and human errors, the suggested guidance went beyond existing requirements. Since a better understanding of the impact of human performance upon risk is the remaining frontier, it is anticipated that improvements in collection and analysis of data related to human performance must occur. However, further development is needed which is outside the scope of this reporting guidance document.

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 50.73), which became effective on January 1, 1984. Section 50.72 provides for immediate notification requirements via the emergency notification system (ENS) and Section 50.73 provides for 30-day written licensee event reports (LER).

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.

Experience has shown that the threshold of reporting has not been consistently implemented and some problems exist with the interpretation of the guidelines and definitions. A 1990 survey on the effect of NRC regulation on nuclear power plant activities and subsequent event reporting workshops also indicated a need for further guidance on the two reporting rules. (2)

Therefore, the NRC staff prepared NUREG-1022, Revision 1, which clarifies implementation of the existing 10 CFR 50.72 and 50.73 rules and consolidates important NRC reporting guidelines into one reference document. The clarifications include major editing of the previous guidelines. The document is structured to assist licensees in achieving prompt and complete reporting of specified events and conditions. The revised guidelines are not expected to result in a significant change in the annual industry-wide total numbers for ENS notifications and LERs. The effect on individual licensees is expected to vary.

The document addresses general issues of reporting that have not been consistently applied and covers such diverse subjects as engineering judgment, multiple failures and related events, deficiencies discovered during licensee engineering reviews, and human performance issues. The guidelines for specific reporting criteria have been enhanced by improved discussions of concepts, thresholds, and illustrative examples; definitions of key terms and phrases; and original ENS guidelines for some criteria that were not previously addressed. A new section has been added that discusses ENS communications and methods, voluntary reporting, retraction of reports,

its root causes, safety assessments, and corrective actions are available, to permit NRC engineering analyses and studies.

Some reporting guidance for 10 CFR 50.72 and 50.73 was contained in the Statements of Considerations for the rules. More detailed guidelines and examples of reportable events were developed and issued in NUREG-1022 and its Supplements 1 and 2. The intent of these publications was to achieve complete reporting of specified events and conditions. Subsequently, additional interpretations and directions on certain subjects have been issued in NRC bulletins, information notices, and generic letters.

1.2 Reporting Guidelines and Industry Experience

Event reporting under these rules since 1984 has contributed significantly to focusing the attention of the NRC and the nuclear industry on the lessons learned from operating experience to improve reactor safety. In the mid-1980's, decreasing trends in the number of reactor transients and in the number of significant events and improvements in reactor safety system performance were noticeable. Since 1989, these trends have leveled off as fewer plants were on a learning curve and industry completed improvements that have a high return in safety performance. While the more obvious lessons have been extracted from operating experience, more analyses need to be performed and new efforts need to be developed to extract further lessons from operational data.

The operational experience submitted in accordance with 10 CFR 50.72 and 50.73 is publicly available and has been used by other organizations in ways that are most often beneficial to nuclear safety. However, uses in areas that were unintended, such as in prudence and reasonableness hearings, in statistical presentations and comparisons of reporting rates without regard to or inclusion of a technical analysis of the safety significance of the events, can lead to unwarranted impressions of safety performance. In such uses, there has been a tendency to only count the number of reported events without assessing their individual safety significance. Such misuses could result in licensees adopting a more restrictive reporting threshold in order to reduce the number of reportable events, although the Commission's requirement for a low threshold has not changed. This can be counterproductive to the purpose of these rules.

Experience has shown that the threshold of reporting, as well as other areas of the reporting rules, has not been consistently implemented. Some problems have been incurred in such areas as interpretation of the guidelines and definitions, timeliness of reporting, reporting of generic concerns, engineering judgment, and reporting of deficiencies found during design reviews. These problems, as well as a 1990 survey on the effect of NRC regulation on nuclear power plant activities and subsequent event reporting workshops, identified the need for further guidelines on the two reporting rules.

(2)

To the extent practicable,

For an outage that lasts longer than 30 days, such as 60 days, similar events that are part of the same activity or test program and are therefore related may be reported as a single LER. Report all failures that occurred within the first 30 days of discovery of the first failure on one LER. State in the LER text that a supplement to the LER will be submitted 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).

(3)

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 Design-Bases Documentation Reviews, Safety System Functional Inspections, and Other Licensee Engineering Reviews

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.

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Licensees should handle reporting suspected but unsubstantiated discrepancies discovered during such a review program in the same manner as other potentially reportable items. See Section 2.11 for discussion of reporting time limits and discovery dates.

(4)

2.5 Engineered Safety Features Actuations

There is no standard definition of what constitutes an engineered safety feature. The reporting criterion was based on each plant having defined systems as ESF (e.g., in the plant's final safety analysis report (FSAR)). ~~In order to promote consistent reporting for a minimum set of systems, the staff requests that licensees report, on a voluntary basis if need be, actuations of the systems listed in Table 2, Section 2.3.2. See Section 3.3.2 for further discussion of this matter.~~

(5)

2.6 Events and Conditions Initially Discussed with the NRC Staff or Identified by NRC Inspections

Some licensees 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 understanding for cases in which the NRC staff identified a reportable event or condition to the licensee via inspection or assessment activities. Such means of reporting do not satisfy 10 CFR 50.72 and 50.73. The requirement is to report to the ENS and LER systems events or conditions meeting the criteria stated in the rules.

2.7 Multiple Component Failures

There have been cases in which licensees have not reported multiple, sequentially discovered failures of systems or components occurring during planned testing. This situation was identified as a generic concern on April 13, 1985, in NRC Information Notice (IN) 85-27, "Notifications to the NRC Operations Center and Reporting Events in Licensee Event Reports," regarding the reportability of multiple events in accordance with §§50.72(b)(2)(iii) and 50.73(a)(2)(v) (event or condition that alone could prevent fulfillment of a safety function). [This reporting criterion is discussed in Section 3.3.3 of this report.]

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 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.

A single component failure in a safety system is reportable if it is determined that the failure mechanism could reasonably be expected to occur in one or more redundant components and thereby prevent fulfillment of the system's safety function. In addition, 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 prevent the fulfillment of the safety function.

Relief Valve Testing

~~When performing periodic surveillance tests of safety or relief valves it is not uncommon to find more than one valve to be lifting outside of the TS-allowed tolerance band, which is typically plus or minus 1 percent.~~

~~If not reportable under §§ 50.72(b)(2)(iii) and 50.73(a)(2)(v) [event or condition that alone could prevent fulfillment of a safety function], this situation would still usually be reportable under §50.73(a)(2)(vii) (common cause failure) because the existence of similar discrepancies in multiple~~

(6)

(6)

Independent valves is a good indication that the discrepancies probably arose from a common cause. This common cause failure criterion is discussed in Section 3.3.4 of this report.

An example involved the sequential testing of main steam safety valves. Of the 20 valves tested, 17 were out of tolerance (13 with set points above the technical specification by as much as 4 percent). The licensee initially did not report this condition because it believed the valves could fulfill their safety function because no safety relief valve set pressure exceeded 1397 psia (110 percent of the system design pressure). However, the licensee determined a common-mode failure mechanism was the cause for most of the failures; therefore, the condition was reportable as a common mode failure.

This situation also may be reportable under §50.73(a)(2)(i)(B), operation or condition prohibited by TS. As discussed in Section 3.2.2 of this report, discrepancies found in TS 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, to believe that the discrepancy occurred earlier. However, in the cases of interest here, the existence of similar discrepancies in multiple valves is a good indication that the discrepancies arose over a period of time.

Depending on the significance of the discrepancies and the exercise of engineering judgment, this situation also may be reportable under one or more of the following sections:

1. Section 50.73(a)(2)(ii), seriously degraded, unanalyzed condition that significantly compromised plant safety, outside design basis or in a condition not covered by procedures. These four criteria are discussed in Section 3.2.4 of this report.
2. If discovered during operation, Section 50.72(b)(1)(ii). These are the same four criteria as above, discussed in the same section of this report.
3. If discovered when shut down, Section 50.72(b)(2)(i), seriously degraded or unanalyzed condition that seriously compromises plant safety. This involves only two of the four criteria discussed above. This reporting requirement is discussed in Section 3.3.1 of this report.

Frequently, during an outage, safety valves are removed and replaced with refurbished valves. Then the surveillance testing, on the valves that were removed, is performed later in a shop or test facility. The same guidelines as discussed above would apply, as appropriate, to this situation. For example, if the test results indicate that the plant was operating in a condition that could prevent fulfillment of a safety function, it would be reportable as such.

2.8 Human Performance Issues

Human performance often influences the outcome of nuclear power plant events. Detrimental personnel errors may be caused by inadequate procedures, training, verbal communications, human engineering, quality control management, or supervision. A specific description of the causes and effects of human performance as they relate to an event are to be included in the LER pursuant to §50.73(b)(2). See Section 5.2.1(2) of this report for further discussion of this matter.

2.9 Voluntary Reporting

The Statement of Considerations for 10 CFR 50.73 specifically addresses the use of voluntary LERs.¹ It is stated that "...licensees are permitted and encouraged to report any event or condition that does not meet the criteria contained in §50.73(a), 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." The Commission encourages voluntary LERs rather than information letters or 10 CFR 50.9 oral reports to report operational events that do not meet the criteria contained in 10 CFR 50.73. The LER format is preferable because it provides for the information needed to support NRC review of the event and facilitates administrative processing, including data entry. The NRC recognizes that the number of LERs is not in itself an accurate or appropriate measure to judge a plant's safety performance. Voluntary reporting of LERs is further discussed in Section 5.1.5 of this report. In addition, voluntary reporting is encouraged under 10 CFR 50.72, as discussed in Section 4.2.3 of this report.

2.10 Retraction/Cancellation of Event Reports

Licensees have expressed concerns about the counting of event reports, both ENS notifications and LERs. The NRC staff has indicated that its interest is in evaluating the reported information, not in simply counting the number of events reported. While event reports may be formally withdrawn, the staff has often found the information reported useful and has maintained the information on file with the withdrawal notation.

(which later is determined not to be required)

Via a follow-up ENS call.

If a licensee so chooses, an ENS notification can be retracted, and an LER can be canceled using the same procedure by which the initial report was made.

The retractions and cancellations are further discussed in Section 4 for ENS notifications and Section 5 for LERs. Sound, logical bases for the withdrawal should be communicated with the request. (Example 3 in Section 3.3.1 illustrates a case where there were sound reasons for a retraction. The last event under Example 1 in Section 3.3.2 illustrates a case where the reasons for retraction were not adequate.)

retraction

LER retractions should be made by letter.

¹48 FR 33853, July 26, 1983.

2.11 Time Limits for Reporting

10 CFR 50.72

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

- 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 "...as soon as practical and in all cases, within one-hour of the occurrence of any of the following:...."
- 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:...."

10 CFR 50.73) and in these cases this is the "Event Date".

10 CFR 50.73 requires submittal of an LER "within 30 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.

(8)

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from
p.17

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, as was discussed in the guidance in NUREG-1022, Supplement 1, Question 14.5, 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 30-day clock) is the date that the technician sees a problem. Thus, for a single event or condition, it is possible to have several applicable dates:

1. The Event Date when the event actually occurred (entered in Item 5 of the LER)
2. The Discovery Date when someone in the plant recognizes that the event has occurred (starts the 30-day clock and should be entered in Item 5 of the LER (event date) if the event date cannot be clearly defined).
3. The Report Date when the LER is submitted (entered in Item 7 of the LER).

The previous guidance in NUREG-1022, Supplement 1, Question 14.5, also discussed a "reportability" date, i.e., the date when someone decides or "discovers" that the event is reportable; however, this date is not used on the LER form or for starting the reportability clock.

If there is a significant length of time (> 30 days) between the event date and either (1) the discovery date or (2) the date when the event was determined to be reportable, the reason for the delay should be discussed in the LER text.

General

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 an evaluation should generally proceed on a schedule commensurate with the safety significance of the question. A licensee may continue with plant operation provided there is a reasonable expectation that the equipment in question is operable. Whenever this reasonable expectation no longer exists, or significant doubts begin to arise, the equipment should be considered inoperable and appropriate actions, including reporting, should be taken. This is the "Event Date" in these cases.

(8)

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into
p. 16

3.2.1 Plant Shutdown Required by Technical Specifications

§50.72(b)(1)(i)(A)	§50.73(a)(2)(i)(A)
Licensees shall <u>report</u> : "The <u>initiation</u> of any nuclear plant shutdown required by the plant's Technical Specifications."	Licensees shall <u>submit a Licensee Event Report on</u> : "The <u>completion</u> of any nuclear plant shutdown required by the plant's Technical Specifications."

If not reported as an emergency under §50.72(a), licensees are required to report the initiation of a plant shutdown required by TS to the NRC via the ENS as soon as practical and in all cases within 1-hour of the initiation of a plant shutdown required by TS to the NRC via the ENS. If the shutdown is completed, licensees are required to submit an LER within 30 days.

Discussion

This 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 the performance of any action to start reducing reactor power to achieve a nuclear plant shutdown required by TS.

A reduction in power for some other purpose, not constituting initiation of a shutdown required by TS, is not reportable under this criterion. This includes reducing power only for the purpose of repairing a component.

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. X

An LER is not required if a failure was or could have been ~~be~~ corrected before a plant has completed shutdown (as discussed above) and no other criteria in 50.73 apply. This includes a situation where the plant is shutdown, the problem is fixed, ~~and the plant is restarted~~ before the shutdown was required by TS. X
and (9)

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 submitted 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, deenergized. 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 submitted within 30 days 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.

~~Previous guidance in NUREG 1022, Supplement 1, posed the following situations:~~

• ~~Question 1-2:~~

What about the situation where you have seven ^{and} 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?

(10)

(9)

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 1.3:~~

(10)

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?

X

S

Answer:

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.

An LER is required if the conditions of an LCO are not met (e.g., by exceeding action statement constraints).

The LCO allows a plant a specified time interval (referred to as the allowed outage time) to accomplish corrective actions (e.g., restoration of equipment, testing of other equipment, and/or an orderly shutdown to either the hot- or cold-shutdown mode).

If a condition existed for a time longer than permitted by the TS, it must be reported 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 TS existed before discovery.)

~~Failure to promptly declare equipment inoperable can also lead to violation of action statement constraints, which are reportable even if the equipment inoperability is within the LCO allowed outage time. For example, such failure to promptly declare equipment inoperable could result in failure to take certain required actions such as testing redundant equipment. It could also result in taking prohibited actions such as removing redundant equipment from the service for maintenance.~~

(11)

(3) TS Surveillance Requirements

Section 50.36(c)(3) outlines surveillance requirements in TS. For the purpose of evaluating the reportability of discrepancies found during TS surveillances, an operation or condition prohibited by the TS existed and is reportable if the time of equipment inoperability exceeded the LCO allowed outage time. 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, to believe that the discrepancy existed previously (e.g., the equipment history and cause of failure).

~~Section 2.7 provides a discussion of multiple component failures. (12)~~
~~As discussed in Section 2.7 of this report, multiple failures may be an indication of a condition that has persisted for some time.~~

action Missed surveillances are reportable when the surveillance interval plus allowed surveillance interval extension (e.g., STS section 4.0.2) plus the LCO statement time is exceeded. In essence, this means enough time has elapsed that, as a result of the missed surveillance, a TS controlled system must be declared inoperable and the LCO action statement time has been exceeded. If the LCO action statement requirements are not met, the event is reportable even though the surveillance is subsequently satisfactorily performed.

XX
(13)

(4) Design Features

Section 50.36(c)(4) indicates that design features to be included in TS are those features of the facility such as materials of construction or geometric arrangements which, if altered or modified, would have a significant effect on safety and are not covered by items (1) through (3) above.

Reportability requirements related to design features are included in other sections of 10 CFR 50.72 and 50.73.

(5) Administrative Requirements, Including Radiological Controls, Required by Section 6 of the STS, or Equivalent

Section 6 of the STS, 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. Failure to meet such administrative requirements is prohibited by the TS. Whether it is reportable as an LER depends upon whether it results in a condition ~~covered by the LER rule. If the violation of the administrative requirements of TS results in operations prohibited by TS, then its reportable.~~

insert-29
(14)

~~For example, operation with less than the required number of people on shift would clearly constitute operation prohibited by the TS, or operation with a procedure that had not been properly approved would constitute operation prohibited by the TS. However, if the requirement is only administrative and does not affect plant operation, then an LER is not required; for example, a change in the plant's organizational structure that has not been approved as a Technical Specification change.~~

(15)

This reporting requirement deals with matters affecting plant operation more substantially and more directly than straightforward administrative matters.³ (See Example 4 below for a discussion of typical cases.)

Radiological conditions and events that are reportable are defined in 10 CFR 20.403 and 20.405 (or 20.2202 and 20.2203 for the new Part 20). Redundant reporting is not required.

(16)

³The proposed rule would have required reporting when "a TS action statement is not met." The wording of the final rule requires reporting "Any operation or condition prohibited by the plant's Technical Specifications." The Statements of Consideration for the final rule indicate that this change was made to accommodate plants that did not have requirements specifically defined as action statements (48 FR 33855, July 26, 1983).

Insert-29

reportable as a LCO violation, or reportable under other provisions of the LER rule or other reporting criteria. A violation of an administrative TS, in and of itself, does not substantially and directly affect plant operation and does not constitute a reportable condition. However, any violations of TS administrative requirements should be evaluated for significant effects on plant operations under internal investigation procedures and evaluated for applicability of other reporting criteria (e.g., 20.403, 20.405 and 73.71). A great deal of discretion must be applied in evaluations of conditions addressed in Section 6 of the TS.

permitted by TS, exceeded the TS surveillance interval plus the LCO action statement times.

(3) Entering STS 3.0.3

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 for 1 hour until chiller (A) was restored to service and the temperature was restored to within TS limits. An LER is required for this event because STS 3.0.3 was entered.

(17)

(4) Administrative Requirements, Including Radiological Controls, Required by Section 6 of the STS, or Equivalent

If a control room is operated with less than the required number of people on shift or is operated with a required procedure that has not been properly approved, these operations would constitute a condition or event prohibited by the TS, and as such are reportable. However, if a requirement is only administrative and does not substantially and directly affect plant operation, then an LER is not required.

If a change in the plant's organizational structure is made that has not yet been approved as a TS change, an LER is generally not required. However, TS violations more substantially and directly affecting plant operation, such as deletion of a shift technical advisor position before NRC approval, would be reportable via an LER.

Regarding radiation controls, those events covered by 10 CFR 20.403 (20.2202) and 20.405 (20.2203), should be reported under 10 CFR 50.72 and 50.73, as appropriate.

Regarding radiation controls required by the plant's administrative TS, procedure violations or failures to implement such procedures, such as failure to lock high radiation area doors, are generally not reportable. However, a substantial breakdown in the radiation control program or the general failure to have a TS required program would be considered reportable by the staff.

Another example of an event which is generally not reportable deals with overtime. If the plant administrative TS set limits for overtime worked (e.g., a maximum of 16 hours in a 24-hour period) and a single instance of a TS violation occurs, it is not reportable. However, a substantial breakdown in the required program or a general failure to have the required program would be considered reportable by the staff.

(18)

(5) Missed or Deficient Tests Required by ASME Section XI IST and ISI, and by STS 4.0.5, or Equivalent

Examples of reportable conditions are failures to perform required activities within specified times for those components governed by TS. Such activities include stroke testing valves, testing valves in the

- (1) The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded.

As indicated in the Statements of Considerations, this paragraph includes material (e.g., metallurgical or chemical) problems that cause abnormal degradation of the principal safety barriers (i.e., the fuel cladding, reactor coolant system pressure boundary, or the containment). Examples of this type of situation include:

- (a) 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, and would involve a release of significant quantities of fission products.
- (b) Cracks and breaks in the piping or reactor vessel (steel or prestressed concrete) or major components in the primary coolant circuit that have safety relevance (steam generators, reactor coolant pumps, valves, etc).
- (c) Significant welding or material defects in the primary coolant system.
- (d) Serious temperature or pressure transients.
- (e) Loss of relief and/or safety valve functions during operation.
- (f) Loss of containment function or integrity including:
 - (i) Containment leakage rates exceeding the authorized limits.
 - (ii) Loss of containment isolation ~~valve~~ function during tests or operation. (19)
 - (iii) Loss of main steam isolation ~~valve~~ function during test or operation, or
 - (iv) Loss of containment cooling capability.

Examples of events that the staff would consider reportable as reactor coolant system cracks or breaks include cracks or breaks that result in leakage. Examples of events that the staff would consider reportable as significant reactor coolant system welding or material defects include items which cannot be found acceptable under ASME Section XI, IWB-3600, "Analytical Evaluation of Flaws", or items that exceed the standards in ASME Section XI, Table IWB-3410-1, "Acceptance Standards." (20)

Examples of events that the staff would consider reportable as serious temperature or pressure transients include:

- (a) Low temperature overpressure transients where the pressure temperature relationship violates pressure-temperature limits derived from Appendix G to 10 CFR Part 50.
- (b) Substantial and increasing power level oscillations such as occurred at LaSalle in 1989. These would have caused an automatic reactor trip, if not preempted by a manual trip, and would have been reported as the cause of a trip. In this case, the significance or seriousness was not in the specific temperature and pressure attained, which were modest, but in the implication that the previous understandings and safety analyses of BWR stability might be deficient.

~~Another type of degradation the staff considers reportable would be loss of part of a normal barrier between the reactor coolant system and the environment. This can happen when one of the Event V isolation valves (valves between the reactor coolant system and a low pressure system outside containment) is opened inadvertently.~~

(21)

- (2) The nuclear power plant being in an unanalyzed condition that significantly compromises plant safety.

(22)

As indicated in the Statements of Consideration:

"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."⁴

"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."⁵

"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

⁴48 FR 39042, August 29, 1983 and 48 FR 33856, July 26, 1983.

⁵48 FR 39042, August 29, 1983.

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."⁶

"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."⁷

- (3) The nuclear power plant being in a condition that is outside the design basis of the plant. (23)

Examples of events or conditions the staff considers reportable include errors in the actual design, such as discovery that an ECCS design does not meet the single failure criterion. They also include hardware problems such as discovery that high energy line break restraints are not installed. In cases such as this, a 10 CFR 50.72 report is sometimes made and then retracted, without submittal of an LER, because further analysis shows that the plant is actually within its design basis. For example, analysis might show that the particular restraints that are missing are not needed for compliance with the design basis.

Another example of an event or condition that the staff considers reportable is discovery that one train of a required two train safety system has been incapable of performing its design function for an extended period of time during operation. For example, in a two-train ECCS system, one train might be found with a design flaw or with a component that would never have functioned because it was installed incorrectly and a test that would reveal the problem was not performed. This would be considered outside the design basis because, for an extended period of time, the system did not have suitable redundancy. Note that this discussion concerns events that actually place the plant outside its design bases. It does not include minor infractions such as (1) cases of technical inoperability, where a component is declared inoperable because a surveillance test is overdue, or (2) cases where the LCO allowed outage time is slightly exceeded. (These conditions may, however, be reportable as conditions prohibited by the Technical Specifications, 10 CFR 50.73(a)(2)(i)(B).) (24) an X

that rendered the train inoperable

⁶48 FR 39042, August 29, 1983 and 48 FR 33856, July 26, 1983.

⁷48 FR 39042, August 29, 1983 and 48 FR 33856, July 26, 1983.

⁸10 CFR Part 50, Appendix A, Introduction and Criterion 35, and Appendix K, Item I.D.1, indicate that a minimum design criterion is suitable redundancy meeting the single-failure criterion.

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, that the threat is reportable as an actual threat via ENS as soon as practical and in all cases within 1 hour.

In most cases, events such as earthquakes, approaching hurricanes or tornado warnings 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, rather than because the event is considered an actual threat. Usually, with the passage of time, it is apparent that an actual threat did not occur and, thus, no LER is submitted (see Example 1). In some cases, with the passage of time, it is judged that an actual threat did occur and, thus, an LER is submitted (see Example 2).

Section 3.2.8 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.

(25)

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 via the ENS as soon as practical and in all cases within 1-hour. 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 watchstanders in order to allow some to rest.

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.

However, the unavailability of one non-redundant component or train such as a meteorological tower, radiation monitor, plant computer or ERF, for a short period of time, generally is not reportable. For this type of equipment, which is very rarely called upon, the staff would consider period of time less than 8 hours to be short.

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, or public prompt notification system, including sirens and other alerting systems.

If a ~~large storm~~ significant natural hazard (e.g., earthquake, hurricane, tornado, flood, etc.) or other event causes ~~roads to be closed~~ 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 $\frac{1}{8}$ hours would warrant an immediate notification.

(26)

Generally, licensees have developed criteria for what would be considered a large segment of alert systems, constituting a major loss of offsite response capability that is reportable, and incorporated their criteria into plant procedures.

- 28 of 54 alert sirens reported out of service for an hour as a result of a local ice storm and a return-to-service estimate was unknown.
- All offsite emergency sirens were:

temporarily — found inoperable during a monthly test. (27)

- taken out of service for ~~4 hours~~ of repair.
- inoperable because control panel power was lost for an unknown period.
- inoperable because the county radio transmitter ^{temporarily} failed. ~~for 4 hours.~~

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.

(3) 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.

(4) 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.

(or disable the function in question) for a substantial period of time and still operate the plant safely.

- 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. ~~Thus, for necessary actions that need to be taken within a few minutes, the need to process a radiation work permit and/or wear protective clothing would constitute significant hampering. However, for necessary actions where considerable time is available, the same factors may not constitute significant hampering.~~ (28)
- Actions such as room evacuations that are purely 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 containing systems important to safety and, as a result, the ability of the operators to perform necessary duties is significantly hampered.

Fairly common 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 ~~(or would be)~~ significantly hampered. (29)

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.

Fires pose a unique threat in that (1) until the fire has been extinguished the extent of its spread is open ended and (2) at any time the full extent of damage affecting the safe operation of the nuclear power plant may not be readily apparent.

In most cases, fires result in ENS notification because there is a declaration of an emergency class, which is reportable under §50.72(a)(1)(ii) as discussed in Section 3.1.1 of this report, rather than because the fire is considered to

constitute an actual threat or significant hampering.¹⁰ Often, with the passage of time, it is apparent that an actual threat or significant hampering did not occur and, thus, no LER is submitted. In other cases, the event is judged to meet one of these criteria and an LER is submitted.

Generally, ^{or} the staff believes that control room fires would ^{significant} be reportable as an actual threat or significant hampering if they involve any effect on plant systems, ^{safety} any significant potential for propagation, ~~or any donning of respiratory equipment~~. However, the staff considers it 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 and could not reasonably be expected to threaten plant safety and thus, is not reportable under this criterion. Examples could include small paper fires in ash trays or trash cans, or cigarette burns of furniture or upholstery. (30)
(31)

Examples

~~Previous guidance in NUREG-1022, Supplement 1, posed the following situations:~~

• ~~Question 9.4:~~ (10)

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.

• ~~Question 9.5:~~ (10)

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.

¹⁰ 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 be considered an Unusual Event.

3.3 Four-Hour ENS Notifications and LER Reports

This section addresses §50.72(b)(2), "Non-Emergency Events--Four-Hour Reports," and 10 CFR 50.73 written reports associated with these 50.72 notifications. If not reported as a declaration of emergency class under §50.72(a) or as a non-emergency 1-hour report under §50.72(b)(1), licensees are to notify the NRC as soon as practical and in all cases within 4 hours of the occurrence of any of the events required by §50.72(b)(2) and to submit an LER within 30 days for any event or condition required by 10 CFR 50.73.

In addition to events reportable under both 10 CFR 50.72 and 50.73, several requirements for 50.72 notifications only or LERs only are included in this section because of the sequential numbering scheme used. For example, common-mode failures of channels, trains, or systems, as discussed in Section 3.3.4, require LERs, but no ENS notifications are explicitly required unless reportable under other criteria. Transport of a contaminated person to an offsite medical facility, as discussed in Section 3.3.7, requires ENS notification but no LER.

X

b

3.3.1 Shutdown Plant Found in Degraded or Unanalyzed Condition

<p style="text-align: center;">§50.72(b)(2)(i)</p> <p>Licensees shall report: "Any event found while the reactor is shut down, that, <u>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.</u>"</p>	<p style="text-align: center;">10 CFR 50.73</p> <p>[Events found while the reactor is shutdown that involve degradation of the principal safety barriers or unanalyzed conditions that significantly compromise plant safety are addressed by §50.73(a)(2)(ii). Therefore, an LER is required. See Section 3.2.4.]</p>
--	---

If not reported under §50.72(a) or (b)(1), licensees are required to report any such condition to the NRC via the ENS as soon as practical, and in all cases within 4 hours of discovery of the condition. Licensees are required to submit an LER within 30 days.

Discussion

Guidelines for identifying events that would result in the nuclear power plant being seriously degraded or being in an unanalyzed condition that significantly compromises plant safety are discussed in Section 3.2.4 of this report.

Examples

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

Insert - 54

~~With the plant in Mode 6 (refueling), ultrasonic testing revealed a number of failed fuel rods (approximately 233 were identified in 88 of 100 fuel assemblies scheduled for reinsertion) that far exceeded 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.~~

(32)

An ENS notification is required because a principal safety barrier (the fuel cladding) was found seriously degraded. An LER is required.

Insert-54

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 six to 12 failed rods. The end of cycle reactor coolant system Iodine-131 activity averaged 0.025 microcuries per milliliter. Following the end of cycle shutdown, Iodine-131 spiked to 11.45 microcuries 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.

3.3.2 Actuation of an Engineered Safety Feature or the Reactor Protection System

§50.72(b)(2)(ii)	§50.73(a)(2)(iv)
<p>Licensees shall report "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:</p> <p>(A) The actuation results from and <u>is</u> part of the preplanned sequence during testing or reactor operation;</p> <p>(B) The actuation <u>is</u> invalid and:</p> <p>(1) Occurs while the system is <u>[or]</u> properly removed from service;</p> <p>(2) Occurs after the safety function has been already completed; or</p> <p>(3) Involves only the following specific ESFs or their equivalent systems;</p> <p>(i) Reactor water clean-up system;</p> <p>(ii) Control room emergency ventilation system;</p> <p>(iii) Reactor building ventilation system;</p> <p>(iv) Fuel building ventilation system; or</p> <p>(v) Auxiliary building ventilation system."</p>	<p>Licensees shall report "any event or condition that resulted in a manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS), except when:</p> <p>(A) The actuation resulted from and <u>was</u> part of the pre-planned sequence during testing or reactor operation;</p> <p>(B) The actuation <u>was</u> invalid and:</p> <p>(1) Occurred while the system is properly removed from service;</p> <p>(2) Occurred after the safety function has been already completed; or</p> <p>(3) Involved only the following specific ESFs or their equivalent systems;</p> <p>(i) Reactor water clean-up system;</p> <p>(ii) Control room emergency ventilation system;</p> <p>(iii) Reactor building ventilation system;</p> <p>(iv) Fuel building ventilation system; or</p> <p>(v) Auxiliary building ventilation system."</p>

[or] (33)

If not reported under §50.72(a) or (b)(1), licensees are required to report any engineered safety feature actuation, including the reactor protection system, to the NRC via the ENS as soon as practical and in all cases within 4 hours of the event. Licensees are required to submit an LER within 30 days.

Discussion

The Statements of Considerations indicate that this paragraph requires events to be reported whenever an ESF actuates either manually or automatically, regardless of plant status. It is based on the premise that the ESFs 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 an ESF was needed to mitigate the consequences (whether or not the equipment performed properly) and events where an ESF operated unnecessarily. In discussing the reporting of actuations which are part of preplanned procedures, the Statements of Considerations also state that actuations that need not be reported are those initiated for reasons other than to mitigate the consequences of an event (e.g., at the discretion of the licensee as part of a preplanned procedure).¹¹

This indicates an intent to require reporting actuations of features that mitigate the consequences of significant events. Generally, 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 ESF 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 ESF's are provided to mitigate the consequences of a significant event.

Single trains do mitigate the consequences, and, thus, train level actuations are reportable. *for plants which classify a diesel-generator as an ESF, (34)*

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 ESF function). (See Example 3 below.)

The staff also considers deliberate manual actions, in which one or more ESF components are actuated in response to actual plant conditions, 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 an ESF was needed to mitigate the consequences of the event. For example, starting a safety injection pump in response to a rapidly decreasing pressurizer level or starting HPCI in response to a loss of feedwater would be reportable. However, shifting alignment of makeup pumps or closing a containment isolation valve for normal operational purposes would not be reportable.

The Statements of Considerations also indicate that "actuation" of multichannel ESF actuation systems is defined as actuation of enough channels to complete the minimum actuation logic. Therefore, single channel actuations, whether caused by failures or otherwise, are not reportable if they do not complete the minimum actuation logic.¹²

¹¹48 FR 33854, July 28, 1983, 48 FR 39043 and 48 FR 39044, August 29, 1983.

¹²48 FR 33854, July 28, 1983, 48 FR 39043 and 48 FR 39044, August 29, 1983.

Note, however, that if only a single ESFAS channel actuates in response to plant parameters for which there should have been an actuation, this would amount to a failure of the ESF. It would generally be reportable under these criteria (ESF actuation) as well as under 10 CFR 50.72(b)(2)(iii) and 10 CFR 50.73(a)(2)(v) (event or condition alone). This position is consistent with the statement that the Commission is interested in events where an ESF was needed to mitigate the consequences, whether or not the equipment performed properly.¹³

With regard to preplanned actuations, the Statements of Consideration indicate that operation of an ESF as part of a planned test or operational evolution need not be reported. However, if during the test or evolution, the ESF actuates in a way that is not part of the planned procedure, that actuation should be reported. For example, if the normal reactor shutdown procedure requires that the control rods be inserted by a manual reactor trip, the reactor trip need not be reported. However, if conditions develop during the shutdown that require an automatic reactor trip, such a reactor trip should be reported. The fact that the safety analysis assumes that an ESF 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 procedure).¹⁴

(35)

(or other appropriate documentation)

Evolution

(35)

(36)

This implies that the procedural step indicates the specific actuation that will be generated and control room personnel are aware of the specific signal generation before its occurrence or indication in the control room. However, if the system actuates during the planned operation or test in a way that is not part of the planned procedure, such as at the wrong step, that event is reportable.

Evolution (35)

procedure

(37)

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

On September 10, 1992, the Commission published final amendments to 10 CFR 50.72 and 50.73 that apply to reporting of ESF actuations. These amendments eliminate reporting of invalid ESF actuation of systems which had been properly removed from service or for which the safety function which the ESF is intended to accomplish had already been accomplished.

Valid ESF actuations are those actuations that result from "valid signals" or from intentional manual initiation, unless it is part of a preplanned test.

¹³Also see 48 FR 39043, August 29, 1983, which states that this paragraph is intended to capture events during which an ESF actuates or fails to actuate.

¹⁴48 FR 33854, July 28, 1983, 48 FR 39043 and 48 FR 39044, August 29, 1983.

Valid signals are those signals that are initiated in response to actual plant conditions or parameters satisfying the requirements for ESF initiation. Note this definition of "valid" requires that the initiation signal must be an ESF signal. This distinction eliminates actuations which are the result of non-ESF 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. Invalid actuations that occur when the system is already properly removed from service are not reportable if all requirements of plant procedures for removing equipment from service have been met. This includes required clearance documentation, equipment and control board tagging, and properly positioned valves and power supply breakers.

In addition, invalid actuations that occur after the safety function has already been completed are not reportable. An example would be RPS actuation after the control rods have already been inserted into the core.

Finally, invalid actuations of certain specified systems are not reportable. These systems are limited to the reactor water clean up system in boiling water reactors (BWRs), the control room emergency ventilation system, the reactor building ventilation system (RBVS), the fuel building ventilation system and the auxiliary building ventilation system or equivalent ventilation systems. Invalid actuations of other ESF systems continue to be reportable. For BWRs, the actuation of the standby gas treatment system in response to an invalid actuation of the RBVS is also not reportable.

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

There are no standard definitions of ESF or RPS. The reporting criterion is based on each licensee having defined systems as ESF or RPS (e.g., in the plant's FSAR, but not necessarily limited to Chapters 4, 6, and 7). Actuation of a system would be reportable if that system is classified as an ESF or as a portion of the RPS; if not, the actuation is not reportable under this criterion.

In addition, in order to promote consistent reporting for a minimum set of safety systems, the staff requests that licensees report actuation of all the systems identified in Table 2. As discussed above, reporting would be required if the actuated system is one that the licensee has classified as an ESF or part of the RPS. If this is not the case, but the actuated system is included in Table 2, the reporting would be voluntary.

(38)

Table 2 contains systems typically reported under the criterion, by at least some licensees. Systems not identified in this table should not be misconstrued as unimportant or insignificant because of their omission.

(39)

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 a RPS scram and Group III primary containment isolation signals, as designed. All control rods had been previously inserted and all Group III isolation valves had been manually isolated. The licensee isolated RHR to stop the decrease in reactor vessel level.

This event is reportable within 4 hours under this criterion because, although the systems' safety functions had already been completed, the RPS scram and primary containment isolation signals were valid and the actuations were not part of the planned procedure. The automatic signals were valid because they were generated from the sensor by measurement of an actual physical system parameter that was at its set point. An LER is required.

- With the BWR defueled, an invalid signal actuated the RPS. There was no component operation because the control rod drive system had been properly removed from service. This event is not reportable because ~~the~~ the RPS signal was invalid, ⁽¹⁾ and ~~the~~ the system had been properly removed from service, ⁽²⁾ and ⁽³⁾ the safety function had not been completed. (40)
- An immediate notification (§50.72) was received from a BWR licensee. In the reported event, 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 ~~neither~~ the loss of recirculation pumps ^{and the} nor off-normal procedure entry were ~~preplanned~~. An LER is required. In this case, the licensee initially retracted the ENS notification believing that the event was not reportable. After staff review and further discussion, it was agreed that the event is reportable for the reasons discussed above. (41)

event-driven

(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 may occur.

(3) Emergency Diesel Generator (EDG) Starts *(it defined as an ESF)*

(34)

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

(5) Actuation of Wrong Component During Testing

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

This event is not reportable because the event is an inadvertent actuation of ~~a~~ *single* component of an ESF system *rather than a complete actuation of an ESF function.*

(42)

(9) Actuation of ESF During Maintenance Activity

At a BWR, a maintenance activity was under way involving placement of a jumper to avoid ESF 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 ESFs prior to start of work. During the event, a loss of continuity did occur and the ESFs 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.

This event is similar to example 2 above. After considering it, the staff has concluded that the event is not reportable because (1) while the event was not listed as definitely going to occur, it was recognized as having a high probability to occur and was documented in appropriate procedures; (2) plant operating staff clearly recognized the potential for the event to occur; and (3) no other unexpected ESF or other situation occurred which was not recognized and stated in the procedure evolution documented.

However, if during a planned procedure or test, the ESF actuates in a way that is not part of the planned procedure or the unexpected ESF actuations occur, the event would be reportable.

appropriately

(36)

(36)

(35)

(43)

Table 2 Example Systems

Emergency Core Cooling Systems (ECCSs)

For pressurized water reactors (PWRs):

- reactor coolant system accumulators
- boron injection system
- high-, intermediate-, and low-head injection systems, including systems for charging using centrifugal charging pumps, safety injection, and residual (decay) heat removal ~~and their water sources~~

For boiling water reactors (BWRs):

- high- and low-pressure core spray systems ~~and their water sources~~
- ~~high-pressure coolant injection system, feedwater coolant injection system, residual heat removal system, and their water sources~~
- isolation condenser system, reactor core isolation cooling system
- automatic depressurization system

And low-

Anticipated transient without scram (ATWS) Mitigating Systems

Containment Systems

- containment and reactor vessel isolation systems
- containment heat removal and depressurization systems, including the containment spray and additive system ~~and the fan cooler system~~
- containment air purification and cleanups systems
- containment combustible gas control systems, including hydrogen recombiners, igniters, nitrogen inerting systems, and containment atmospheric dilution systems
- BWR standby gas treatment systems

Heating, Ventilating and Air condition (HVAC) Systems for the Control Room and Fuel Handling areas

PWR Auxiliary Feedwater Systems

Electrical Systems

- emergency ac electrical power systems, including emergency diesel generators (EDGs) and their associated support systems (even if classified as an essential auxiliary support in the plant's safety analysis report (SAR), and BWR dedicated Division 3 EDGs and their associated support systems
- ~~actuation and control systems (including associated interlocks) for engineered safety feature (ESF) systems~~

(39)

(44)

(44)

(45)

(44)

(46)

(44)

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 the system was needed at the time.¹⁵

These criteria cover an event or condition where ~~redundant structures or 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 the situation or condition that caused the structure or systems to be unavailable, and~~ 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).

(47)

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

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.

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. 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 (i.e., completely lost), 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

¹⁵ 48 FR 33854, July 28, 1983.

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 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 ESF 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."¹⁶

and:

"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

¹⁶48 FR 33854 and 48 FR 33858, July 26, 1983.

- 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. System leaks or other similar events may, however, be reportable under other sections of the rules.¹⁹

Examples (48)

(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 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

~~Previous guidance in NUREG-1022, Supplement 1, Question 7.14, discussed the following situation:~~

(10)

At our plant, RCIC is not a "safety system" in that we assume no credit for its operation in our safety analysis. Are failures and unavailability of this system reportable?

¹⁹ 48 FR 33854, July 26, 1983.

Answer:

If RCIC is not considered to be an ESF, then its actuation is not reportable under 50.73(a)(2)(iv). However, if the plant's safety analysis considered RCIC as a system needed to remove residual heat (e.g., it is included in the Technical Specifications); then its failure is reportable under 50.73(a)(2)(v). If the RCIC is covered under a Technical Specification surveillance test requirement, then an LER is required under 50.73(a)(2)(i)(B) if the Technical Specification is violated.

(49)

(3) Failure of a Single-Train Environmental System

(49)

~~Previous Guidance in NUREG 1022, Supplement 1, Question 7.13, discussed the following situation:~~

(10)

~~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 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 the system does not perform a "safety function" in the context of the LER rule and failures of the system are not reportable.~~

(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 shutdown 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

~~Previous guidance in NUREG 1022, Supplement 1, Question 7.1, discussed the following situation:~~ (10)

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

Answer:

"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.

(9) Oversized Breaker Wiring Lugs

~~Previous guidance in NUREG-1022, Example C-14, discussed the following situation:~~

(10)

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 ~~not~~ 20 AWG. A No. 18-22 lug is the acceptable industry standard for a No. ^{No.} 20 AWG wire.

X

Since the trip coils were supplied pre-wired, all safety-related breakers utilizing the trip coil were inspected. All other breakers inspected had 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 [50.73(a)(2)(v)].

(10) Contaminated Hydraulic Fluid Degrades MSIV Operation

~~Previous guidance in NUREG-1022, Example C-48, discussed the following situation:~~

(10)

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 because a single 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.

(11) Diesel Generator Lube Oil Fire Hazard

~~The previous guidance in NUREG-1022, Example C-30, discussed the following situation:~~

(10)

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 (i.e., it only affected a single component) [50.73(a)(2)(x)].

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)(v)].

(12) Generic Setpoint Drift

- ~~v Previous guidance in NUREG-1022, Example C-8, discussed the following situation:~~

(10)

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 head correction. The redundant switches were operable. The cause of the occurrence was setpoint 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)(v) or (viii)].

- ~~In addition, NUREG-1022, Supplement 1, Question 7.22 provided the following clarification:~~

(10)

~~Example C 8 indicates that a setpoint drift problem with a particular switch could be reportable. Would you clarify if~~
 Are setpoint drifts ~~are~~ to be reported if they ~~are~~ experienced more than once?

X

problems with a particular switch are

Answer:

The independent failure (e.g., excessive setpoint drift) of a single pressure switch is not reportable unless it alone 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.

(50)

(13) Maintenance Affecting Only One Train

(51)

Previous guidance in NUREG-1022, Supplement 1, Question 7.21 posed the following situation:

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.

(14) Conditions Observed While System Out of Service

~~Previous guidance in NUREG-1022, Supplement 1, Question 7.10 posed the following situation:~~

(10)

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

Answer:

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

(15) Diesel Generator Bearing Problems

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

(52)

The event is reportable because, ~~although both diesels were operable,~~ there was reasonable doubt that both diesels would have remained operable until they completed their safety function if called upon.

(16) 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. HPCI was operable with the disc lodged in the non-blocking position. The event was caused by fatigue failure of a disc pin.

The event is reportable because the HPCI could have been prevented from performing its safety function. In addition, the event is reportable if the fatigue failure is indicative of a common-mode failure.

(17) Defective Component Delivered but not Installed

(53)

The previous guidance in NUREG-1022, Supplement 1, Question 7.19, discussed the following situation:

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.

insert
-77
(18) Operator Inaction or Wrong Action

(54)

Previous guidance in NUREG-1022, Supplement 1, Question 7.25, posed the following situation:

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 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

(10)

~~Previous guidance in NUREG-1022, Supplement 1, Question 7.2, discussed the following situation:~~

A number of criteria indicate that they apply to actual situations only and not to potential situations identified as a result of analysis; yet,

Insert-77

(18) Inadvertent Interruption of Shutdown Decay Heat Removal

The service water pump cooling the inservice Residual Heat Removal (RHR) heat exchanger being used for decay heat removal was inadvertently manually secured from the control room by an operator. Operator action would be required to restore pump operation. Operator action would also be required to initiate operation of the available redundant shutdown cooling loop. Reactor operators routinely monitored the vessel temperature at fifteen minute intervals and an alarm would have sounded in the control room if the vessel temperature reached 180 degrees (below the maximum temperature at which the system could perform its safety function). (In this case, the operators noted the temperature rise as part of their routine monitoring and re-established operation of the secured pump prior to reaching the alarm setpoint.

Engineering judgment is required to decide if the operator's actions lead to a condition which alone could have prevented the fulfillment of a safety function enumerated in these provisions [50.73(a)(2)(v) and (vi)]. Given the existence of reliable control mechanisms (routine monitoring of temperatures and operating alarms), there would not be a reasonable expectation that fulfillment of the safety function would be prevented. Thus, it was reasonable to expect that the operators would have, as they were, alerted to the condition to permit timely restoration of pump operation. Accordingly, this condition is not reportable.

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) ~~Previous guidance in NUREG-1022, Supplement 1, Question 7.3, discussed the following situation:~~ (10)

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).

3.3.4 Common-Cause Failures of Independent Trains or Channels

<p style="text-align: center;">10 CFR 50.72</p> <p>[No corresponding Part 50.72 requirement.]</p>	<p style="text-align: center;">§50.73(a)(2)(vii)</p> <p>Licensees shall report: "Any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to:</p> <ul style="list-style-type: none"> (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident."
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Licensees are required to report a common-cause failure as an LER within 30 days.

Discussion

This criterion requires those events to be reported where a single cause caused a component or group of components to become inoperable in redundant or independent portions (i.e., trains or channels) of one or more systems having a safety function. Included in the common-cause failures are malfunctions caused by such factors as high ambient temperatures, heatup from energization, inadequate preventive maintenance, oil contamination of air systems, incorrect lubrication, use of nonqualified components or manufacturing or design flaws.

(SS)

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.

If a common source exists for failure of more than one component and its nature is such that there is a substantial probability that the failures would occur concurrently, an event would be reportable.

3.3.5 Airborne or Liquid Effluent Release

§50.72(b)(2)(iv)	§50.73(a)(2)(viii)
<p>Licensees shall report:</p> <p>(A) Any airborne radioactive release that, when averaged over a time period of 1-hour, results in concentrations in unrestricted area that exceed 2 times the applicable concentration limits specified in Appendix B to §§20.1-20.601, table II, column 1, of Part 20 of this chapter, or, for licensees implementing the provisions of §§20.1001-20.2401 of this chapter, 20 times the applicable concentration specified in Appendix B to §§20.1001-20.2401, table 2, column 1, of Part 20 of this chapter.</p> <p>(B) Any liquid effluent release that when averaged over a time period of 1-hour, exceeds 2 times the limiting combined concentration limits in Appendix B to §§20.1-20.601, table II, column 2 (see note 1 to Appendix B to §§20.1-20.601), or, for licensees implementing the provisions of §§20.101-20.2401 of this chapter, exceeds 20 times the applicable concentration specified in Appendix B to §§20.1001-20.2401, table 2, column 2, of part 20 of this chapter, at the point of entry into the receiving waters (i.e.,</p> <p>Continued on next page.</p>	<p>Licensees shall report:</p> <p>(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 2 times the applicable concentration of the limits specified in Appendix B, table II of Part 20 of this chapter, or, for licensees implementing the provisions of §§20.2001-20.2401 of this chapter, exceedeo 20 times the applicable concentration <u>limits</u> specified in Appendix B to §§20.101-20.2401, table 2, column 1 of Part 20 to this chapter.</p> <p>(B) Any liquid effluent release that, when averaged over a time period of 1-hour, exceeded 2 times the limiting combined concentration limits in Appendix B to §§20.1-20.601, table II, column 2 (see note 1 to Appendix B to §§20.1-20.601), or, for licensees implementing the provisions of §§20.1001-20.2401 of this chapter, exceeds 20 times the applicable concentration specified in Appendix B to §§20.1001-20.1401, table 2, column 2 of Part 20 of this chapter at the point of entry into the receiving waters (i.e.,</p>

(56)

(56)

<p style="text-align: center;">§50.72(b)(2)(iv) continued</p> <p>unrestricted area) for all radionuclides except tritium and dissolved noble gases. <u>(Immediate notifications made under this paragraph also satisfy the requirements of paragraphs (a)(2) and (b)(2) of §20.403 of this chapter, or, for licensees implementing the provisions of §§20.1001-20.2401, §20.2202 of this chapter.)</u></p>	<p style="text-align: center;">§50.73(a)(2)(viii) continued</p> <p>unrestricted area) for all radionuclides except tritium and dissolved noble gases.</p> <p style="text-align: center;">§50.73(a)(2)(ix)</p> <p><u>Reports submitted to the Commission in accordance with paragraph (a)(2)(viii) of this section also meet the effluent release reporting requirements of §20.405(a)(1)(v) of this chapter, or, for licensees implementing the provisions of §§20.1001-20.2401, §20.2203(a)(3) of this chapter.</u></p>
--	--

(56)

If not reported under §50.72(a) or (b)(1), licensees are required to report such airborne or liquid effluent releases as defined in the regulations above to the NRC via the ENS as soon as practical and in all cases within 4 hours of the event. Licensees are required to submit an LER within 30 days.

Discussion

Although similar to 10 CFR 20.403 (20.2202) and 20.405 (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.

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

- minor incidents involving endangered species
- problems with plant stack or water tower aviation lighting
- peaceful strikes or civil demonstrations
- routine reports of effluent releases to other agencies

Press Release

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

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

and is to be the subject of a press release,

If a particular effluent release has safety significance ~~or is expected to generate public, media, or other agency attention as a result of being unusual or abnormal,~~ then an immediate notification to the NRC would be warranted. (57)

~~Routine radiation releases are not specifically reportable under this criterion. However, if a release receives media attention, the release is reportable under this criterion.~~ (58)

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

Other Government Notifications

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

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

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

Routine reports to a local, State, or Federal agency that do not involve an event or situation, related to the health and safety of the public or on-site personnel, or protection of the environment needs to be reported to the NRC only when that matter get escalated to a "news release" of a "situation".

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) Local Government Notification

~~The licensee contacted the local fire department when a small trash bag in the containment building was ignited by welding sparks. The fire was extinguished within 4 minutes of its discovery and did not result in any damage to plant equipment. The local fire department responded but did not enter the plant site because the fire had been extinguished.~~

~~An ENS notification is needed because the local fire department was notified in response to an event related to the health and safety of on-site personnel.~~

(59)

(4) 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

5 LICENSEE EVENT REPORTS

This section discusses the guidelines for preparing and submitting LERs. Section 5.1 addresses administrative requirements and provides guidelines for submittals; 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. The use of LER information and the review programs associated with LERs are explained in Appendix C.

5.1 LER Reporting Guidelines

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

5.1.1 Submission of LERs

§50.73(d)

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

An LER is to be submitted ^{Saturday,} (mailed) within 30 days of the discovery date. If a 30-day period ends on a Sunday or holiday, reports submitted on the first working day following the end of the 30 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 2.11 for further discussion of discovery date. (60)

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.

immediately below the block. Also give a sequential LER number to the voluntary report as noted in Section 5.2.4(5).

5.1.6 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 5.2.4(5).

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.

~~If a criterion for reportability was checked in Item 11 of NRC Form 366 and later it was determined that other requirements also pertain, a revised LER should be submitted. When a voluntary LER is submitted and later it was~~

(b1)

immediately below the block. Also give a sequential LER number to the voluntary report as noted in Section 5.2.4(5).

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~~If a criterion for reportability was checked in Item 11 of NRC Form 366 and later it was determined that other requirements also pertain, a revised LER should be submitted. When a voluntary LER is submitted and later it was~~

(b1)

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.

(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."

the target/planning date

Discuss ^{pertinent} ~~all~~ corrective actions or enhancements that resulted from the event. ~~The narrative should include the corrective actions that were tracked by the licensee's internal corrective action system.~~ Include when the corrective action was or will be implemented. The term "corrective actions" includes both the actions to restore the system or component to service and the actions to prevent recurrence. 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."

(b2)

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 human performance evaluation was performed, include a statement that the evaluation was performed and its results. List corrective actions adopted by management, including organizational or personnel changes. If the corrective action taken includes personnel disciplinary actions, do not refer to specific individuals by name.

If an independent contractor or consultant was brought in to review the event, so state. Note any pertinent industry supported studies.

If a study was conducted, and results are not available within the 30-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) 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. ~~if corrective actions keep changing and the same type of event keeps occurring, then the root cause has not been addressed.~~ (63)

Include the LER number(s), if any, of previous similar events. If no previous similar events occurred, so state. This serves to increase the efficiency and effectiveness of the LER reviewing process. If any earlier events, in retrospect, were significant in relation to the subject event, discuss why prior corrective action did not prevent recurrence.

(6) 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 1/2 x 11).

5.2.4 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 front side of the two-sided LER form, including the abstract and other data is pre-numbered on the form as page 1 of ___; the back side of the form actually starts page 2 and needs to be numbered. (64)

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

Enter the date on which the event occurred in the six spaces provided. There are two spaces for the month, two for the day, and two 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 060187. Use the discovery date if the event date can not be clearly defined.

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

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

<u>Event Year</u>	<u>Sequential Report Number</u>	<u>Revision Number</u>
91	- 045	- 01

Event Year: Enter the last two digits of the year in which the event occurred. For example, for events occurring in 1991 enter 91 in the spaces provided.

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