

FR 44000 02



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

February 29, 2000

MEMORANDUM TO: ACRS Members

FROM: *Noel Dudley*  
Noel Dudley, Senior Staff Engineer

SUBJECT: PUBLIC MEETING ON PROPOSED CHANGES TO EVENT REPORTING REQUIREMENTS IN 10 CFR 50.73 AND ASSOCIATED GUIDANCE

I attended the February 25, 2000 meeting between the NRC staff and the Nuclear Energy Institute (NEI). The meeting concerned a new reporting requirement contained in the proposed final amendment to 10 CFR 50.72 and 50.73. Ms. Cynthia Carpenter, NRR, explained that the staff deleted the requirement to report any plant condition outside the design basis and added the following requirement to capture conditions that the staff believes represent a reportable subset of the deleted nonconforming conditions:

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

Mr. James Davis, NEI, stated that the addition of the new requirement represents a show stopper in terms of industry support for the proposed amendment. He then asked whether the staff had completed its backfit analysis. He explained that the requirement should be tied to operability and not loss of design or regulatory margins. Licensee representatives presented examples where corrective actions taken in response to the following routine activities would be reportable:

- surveillance activities, such as instrument calibrations;
- trending programs, such as heat exchanger fouling factors; or
- procedural changes made based on operating experience.

NEI suggested changing the requirement from "ensure" to "restore" the ability of equipment to perform its specified function. Mr. James Liehman, NRR, explained that the new requirement was intended for licensees to report significant degraded conditions that did not result in the loss of equipment operability.

NEI suggested moving the new requirement from section 50.73(a)(2)(ii), which concerns loss of safety barriers and unanalyzed conditions that effect safety, to section 50.73(a)(2)(iv), which concerns events or conditions that could have or may prevent the fulfillment of the safety function of structures and systems.

The staff stated that it understood the concerns and would consider them. NEI requested that the staff share with the industry any revision to the new requirement before sending it to the Commission.

Analysis

NRC Division Directors drafted the new reporting requirement, but only one Branch Chief and four staff engineers attended the meeting. Over 20 industry representatives attended the meeting. The industry identified significant problems associated with reporting requirements that are tied to licensees' corrective action programs. The staff attending the meeting, understood and were sympathetic to the problem, but could not make any commitments.

The staff plans on requesting an extension on providing the proposed final amendment to the Executive Director for Operations, rewriting the new reporting requirement, meeting with the industry, and briefing the ACRS at the April 2000 Full Committee meeting.

Attachments: 1. Slides used during the NRC presentation  
2. Slides used during the NEI presentations

cc via e-mail w/o atts.:

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

## PUBLIC MEETING ON EVENT REPORTING REQUIREMENTS

February 25, 2000

### Proposed Agenda

1. Opening Remarks (NRC) & Introductions (All)
2. Summary of:
  - (a) the language of proposed rule (64 FR 36291, 7/6/99) and associated guidance relating to the deletion of the requirement to report conditions outside the design basis of the plant and the proposed requirement relating to reporting degraded or nonconforming components (as discussed during ACRS meeting on February 3, 2000),
  - (b) questions posed in the proposed rule on these changes, and
  - (c) summary of public comments received on these changes.
3. Review and explanation of draft final rule language and guidance points and implementation examples. (See attached pages.)
4. Questions and open discussion
5. Closing Remarks (NRC, All)

Attached pages:  
Excerpts for Discussion

**Rulemaking to Modify**

**Power Reactor Event Reporting Requirements in**

**10 CFR 50.72 and 50.73**

**February 25, 2000**

## **Background**

The proposed rule change was published on 7/6/99

A public meeting was held on 8/3/99 to discuss the proposed rule

Public comments were due on 9/21/99

The ACRS was briefed on the draft final rule on 2/6/00

## Proposed Rule

The proposed rule -- recommended deleting the requirement to report an event or condition that results in the plant being in a condition outside the design basis of the plant.

Significant events would still be captured by other reporting criteria:

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

Examples of reportable events under the proposed new criterion:

- Ability of LPSI valves to open for large-break LOCA, combined with degraded grid voltage, did not meet GL 89-10. They were operable based on less conservative standards.
- Motor operated valves in the reactor building, located below the accident flood level, not qualified for that condition. Pending replacement, they were operable based on the following -- valves could close before being flooded and their positions could be inferred from process parameters.
- Jumper wires in valve operators contaminated with grease as a result of overfilling the limit switch gear box, due to error in generic vendor procedure. They were not qualified for exposure to grease.

Public comment was invited on:

- Whether the proposed new criterion would accomplish its stated purpose.
- Whether the proposed new criterion would be subject to varying interpretations by licensees and inspectors.

Most comments stated that the proposed new criterion would be:

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

Substantial revisions were made to address those concerns and focus on the information needed to carry out the NRC's safety mission.

## Excerpts for Discussion

### Criterion:

Any event or condition that ... Required corrective action for a single cause or condition in order to ensure the ability of more than one train or channel to perform its specified safety function.

### Guidelines:

This criterion requires reporting of an event or condition that required corrective action for a single cause or condition in order to ensure the ability of more than one train or channel to perform its specified safety function. It pertains only to written LERs. Telephone notifications are not required under this criterion.

For events of this type, the "reporting clock" does not start until it is determined that the event or condition requires corrective action for a single cause or condition in order to ensure the ability of more than one train or channel to perform its specified safety function. It is not possible to know whether an event is reportable under this criterion until that point is reached. Once the determination is made, a written LER is required within 60 days.

This criterion involves corrective actions taken for significant conditions adverse to quality, as required by 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." However, it does not include those cases which only involve the checking of multiple trains or channels to determine whether there is a need for action. For example, if one train of a system fails as a result of a sticky solenoid operated valve, it is prudent to check other trains to see if there is a common problem. After checking, if no further action is required to ensure the ability of multiple trains to perform their safety functions, the event is not reportable under paragraph (a)(2)(ii)(C).

This criterion applies to common cause problems that span more than a single train or channel. It may apply to two trains or channels in one system, or it may apply to one train or channel in one system and another train or channel in another system. This is true regardless of whether or not the trains or channels have the same safety function and/or the trains or channels are assumed to be independent in the plant's safety analyses. For example, if it is necessary to correct a single cause or condition to ensure the ability of Train A of the an auxiliary feedwater system and Train A of a high pressure safety injection system to perform their safety functions, paragraph (a)(2)(ii)(C) applies. This is the case even though the two trains have different safety functions and may not be assumed to be independent in the plant's safety analysis.

## Examples:

- (1) A motor operated valve in one train of the RHR/LPCI system was found with a crack 75 percent through the stem. The root cause was environmentally assisted stress corrosion cracking. This resulted from installation of an inadequate stem material, in both trains, as part of a plant modification package, about 14 years earlier. Pending replacement with better material, the valve stems in both trains were replaced with new stems. (Although the new stems were of the same material, they provided for considerable time before failure could be expected.) The event would be captured by this criterion because replacement of the valve stems in both RHR trains was necessary to ensure their ability to perform their specified safety functions.
- (2) It was determined that a number of liquid-filled and isolated containment penetration lines were not adequately designed to accommodate the internal pressure buildup that could occur because of thermal expansion caused by heatup after a design basis accident. This internal pressure buildup could threaten the structural integrity of the penetrations under accident conditions. Several different corrective actions were taken, depending on the specific configurations of the penetrations. For example, for a number of penetrations, relief valves were installed. Some penetration lines were drained and procedures were instituted to ensure they would remain drained. In some lines, inboard containment isolation valves were opened to provide a pressure relief path (after meeting appropriate restrictions such as locking the outboard containment isolation valve closed). The event is reportable under §50.73(a)(2)(ii)(C) because corrective action was necessary for a single cause or condition to ensure the ability of multiple penetrations to perform their specified safety functions.
- (3) Switchyard voltage was observed to decrease below the minimum operability limit established in station procedures for both sources of offsite power. The cause was large amounts of power being transported across the grid concurrent with near peak loads. Reanalysis was performed and restrictions were placed on electrical lineups in order to support operability of the offsite power sources. The event is reportable under §50.73(a)(2)(ii)(C) because corrective action was necessary for a single cause or condition to ensure the ability of multiple offsite power sources to perform their specified safety functions.
- (4) One of three component cooling water pumps tripped due to a ground fault on the power cable leading to the pump. The likely cause was determined to be moisture permeation into the cable insulation over time, a mechanism that was not expected to occur for this type of insulation. The event would be reportable under §50.73(a)(2)(ii)(C) if it is determined that corrective action is necessary for a single cause or condition to ensure the ability of multiple pumps to perform their specified safety functions.

- (5) It was determined that numerous valves experienced over thrusting that exceeded design basis stress levels. The cause was lack of knowledge that resulted in inadequate design engineering at the time the designs were performed. Two kinds of corrective action resulted from reanalysis:
- (i) Some valves were over stressed enough to require replacement to ensure they could perform their specified safety functions.
  - (ii) Other valves were being over stressed enough during routine operations that, although they were currently capable of performing their specified safety functions, the over stressing would, with the passage of time, render them incapable of performing those functions. These valves required modification of their control circuitry to limit stress during routine operation in order to preserve their ability to perform their specified safety functions.

The event would be reportable under §50.73(a)(2)(ii)(C) because corrective action was necessary for a single cause or condition to ensure the ability of multiple trains to perform their specified safety functions.

# NRC Examples

# COMMENTS

- From reviewing each example similar comments were identified on each specific example

# COMMENTS (CON'T)

- Threshold for reportability from degraded condition standpoint
  - GL 91-18 defines OPERABILITY, there is no similar guidance for defining degraded but OPERABLE. There would have to be guidance generated to make this new criteria less susceptible to interpretation
- Voluntary actions will become reportable

# COMMENTS (CON'T)

- Level of corrective action that becomes reportable (i.e., physical change, procedural enhancements, etc...)
- Examples provided will lead to regulation by example and/or inspection

# COMMENTS (CON'T)

- Penalized for being proactive
- By example, the difference between the two criteria (i.e., new criteria vs. (a)(2)(vii)) is OPERABILITY

# Proposed Criterion 10 CFR 50.73(a)(2)(ii)(C)

## Introduction

- Overview
- Basis for new criterion
- Clarity of new criterion
- Impact of new criterion

Recognize attempt to compromise and clarify new criterion based on comments

# Overview

- Does the criterion intend reporting conditions where components are still operable?
- As currently proposed, without further modification, new criterion is a show-stopper
- Newly proposed criterion still lacks clarity and introduces many additional reports
- Context of being under 50.73(a)(2)(ii) can be misleading to stakeholders regarding safety significance of reported items.
  - A. principal safety barriers seriously degraded
  - B. unanalyzed condition that significantly affects plant safety

# Basis of New Criterion

- Industry is confused. (Data gathering?)
- Below threshold of expected reporting
  - Lacks clear tie to risk significance
  - Below operability threshold
- Failure data is obtainable through other established means (EPIX/Maint. Rule)
- Examples imply contention with licensee operability determinations
  - Significant conditions are reportable under existing criteria

# Clarity of New Criterion

- Unclear rule and/or guidance can lead to wide range of interpretation
- No definition of “required corrective action”
  - What is required?
    - Restore margin or restore operability?
    - What is regulatory basis for margin?
  - What is meant by ensure?
    - Does it differ from enhancing reliability?

# Clarity of New Criterion (Continued)

- Physical modification/corrective action to component in question OR “other” (*e.g.*, procedure change, configuration change, comp measure)?
- Timing between conditions is not defined (no time period specified)
  - Differences between corrective action times
  - Differences between discovery of new condition and previous similar occurrence

# Impact of New Criterion

- More LERs will be required with increased licensee and NRC burden
- More discussions with inspection staff over interpretation disagreements - what constitutes “required” corrective action?

# Impact of New Criterion (Continued)

- Rule change creates implied need for documented basis for conclusions about implications for other systems/trains
  - Likely to Result in Additional Inspections & Equipment Unavailability to Avoid Contention

# Impact of New Criterion (Continued)

- Increased burden on trending programs
- Chilling effect on licensee decisions to make voluntary enhancements

# CCW Heat Exchanger Fouling Examples

During a review of the DBA heat removal calculation a non-conservative assumption for fouling factor (FF) is found for the Component Cooling Water Heat Exchangers.

The following examples are given different initial conditions to address varying reporting thresholds.

# CCW

## HX Example 1

- Condition: Assumed FF does not support Operability during summer months.
- Corrective Action: Restrict Operation above a specified ultimate heat sink temperature until modifications can be made, and establish FF monitoring Program.
- Reportable under existing criteria because of the loss of safety function and multiple trains[50.73 (a) (2) (v) & (vii)] and the new criterion as well.

# CCW

## HX Example 2

- Condition: Assumed FF does support Operability during summer months, but margin is reduced.
- Corrective Action: Establish FF monitoring Program, and clean HX's as necessary.
- Not Reportable under existing criteria. No impact on safety function or operability.
- Reportable under the new criterion as modified because of the establishment of the monitoring program.

# CCW

## HX Example 3

- Condition: Assumed FF does support Operability during summer months, but margin is reduced. FF monitoring Program has already been established. HX “A” found to have high FF & Inoperable. “B” HX is Operable, but has high FF.
- Corrective Action: Clean both HX’s
- Not Reportable under existing criteria. No loss of safety function, only one train Inoperable.
- Reportable under the new criterion as modified because both HX’s are cleaned.

# CCW

## HX Example 4

- Condition: Assumed FF does support Operability during summer months, but margin is reduced. FF monitoring Program has already been established. HX “A” found to have high FF & Operable. “B” HX is also Operable, but has increasing FF.
- Corrective Action: Clean both HX’s
- Not Reportable under existing criteria. No loss of safety function, no train Inoperable.
- Reportable under the new criterion as modified because both HX’s are cleaned.

# CCW

## HX Example 5

- Condition: Assumed FF does support Operability during summer months, but margin is reduced. FF monitoring Program has already been established. HX “A” found to have acceptable FF & Operable, but is trending up.
- Corrective Action: Increase frequency of monitoring from weekly to daily for both HX’s
- Not Reportable under existing criteria.
- Reportable under the new criterion as modified because both HX’s have monitoring changes.

# Diesel Wall Example

- Condition: Non Load-Bearing Firewalls, subject to seismic forces, support safety-related components associated with Emergency Diesel Generators. Although walls are operable per engineering judgment, the safety factor of walls is not up to the desirable design standards due to addition of components supported by the walls.
- Corrective Actions: Modifications (bracing) of all walls for 3 trains in both units are being implemented to increase safety factors.
- Not Reportable under existing criteria. No impact on safety function or operability.
- New criterion would require reporting corrective actions to ensure ability of more than one train....

# BWR Control Rod Drive Maintenance

- Conditions: Thermocouples measure temperature to indicate bypass flow (increased temperature indicates seal degradation). Rods are tested during cycle and are operable.
- Corrective Action: High temperature CRDs are candidates for changeout during next outage
- Not Reportable under existing criteria. No impact on safety function or operability.
- This is regular preventive maintenance activity but meets new reportability criterion

# Containment Isolation Valves

- Condition: Steam leak during operation impinges on 2 CIVs (different systems and different trains). Stem lubricant is degraded on both valves. Valves are tested and still operable, but margin is reduced below GL 89-10 program goals.
- Corrective Action: Both stems are lubricated after steam leak was repaired (during refueling outage).
- Not Reportable under existing criteria - No impact on safety function or operability.
- Reportable under new criterion due to corrective action on multiple systems.

# Operating Experience

- Condition: RHR throttle valves are rebuilt frequently, every outage.
- Corrective Action: OE results in procedure changes for operating throttling valves for 2 trains of RHR in test mode to reduce rate of component degradation.
- Not Reportable under existing criteria. No impact on safety function or operability.
- Corrective action applied to both trains of RHR and therefore, would be reportable per the new criterion

# Conclusions

- These examples provide conditions that are clearly not reportable under existing criteria, but would be reportable under the new proposed criterion.
- Any new criterion wording should be modified to preclude unnecessary reporting of routine activities such as those provided by these examples.

# Criterion:

Any event or condition that ...  
Required corrective action for a  
single cause or condition in order to  
~~ensure~~ *restore* the ability of more  
than one train or channel to perform  
its specified safety function.