

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

July 9, 1997

**NRC INFORMATION NOTICE 97-48: INADEQUATE OR INAPPROPRIATE INTERIM FIRE PROTECTION COMPENSATORY MEASURES**

Addressees

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to potential problems associated with the implementation of interim compensatory measures for degraded or inoperable plant fire protection features or degraded or inoperable conditions associated with post-fire safe-shutdown capability. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

The NRC foresaw cases in which fire protection features would be inoperable and allowed licensees, through plant technical specifications (TS) or approved fire protection plans controlled by license conditions, to implement alternative actions to compensate for the inoperable condition or component until permanent corrective actions are implemented. In general, the combination of appropriate compensatory measures and the defense-in-depth fire protection features provides an adequate level of fire protection until the licensees complete the corrective actions. For common types of deficiencies (e.g., an inoperable fire suppression system), the specific compensatory measures are generally noted in either the TS or in the NRC-approved fire protection program. For unique plant-specific situations (e.g., inadequate cable separation), the appropriate compensatory measures are determined by the licensee on a case-by-case basis. (This is discussed further later in the information notice.)

NRC reviews of licensees' corrective actions to address degraded or inoperable conditions associated with a plant's abilities to achieve and maintain post-fire safe shutdown have noted some weaknesses in the interim compensatory measures. For example, some licensees have relied exclusively on the 1-hour roving fire watch as an interim compensatory measure for deficiencies that affect their abilities to achieve and maintain post-fire safe shutdown and have not considered or implemented other appropriate interim compensatory measures, such as briefing operators on degraded post-fire, safe-shutdown-system conditions; temporary repair procedures; temporary fire barriers; or detection or suppression systems. In addition,

PDR I+E NOTICE 97-048 970709

9707020308

updated on  
7/24/97



NRC inspections of fire protection programs have found weaknesses in licensees' fire watch training programs and in the conduct of fire watch duties. Specific examples documented in NRC inspection reports include the following:

- During a November 1995 inspection at Waterford Generating Station (Inspection Report 50-382/95-020, Accession No. 9603250040), NRC inspectors found that the licensee's procedures redefined the intent of a continuous fire watch. The licensee's procedure required a 15-minute roving fire watch, with a margin of 5 minutes, in lieu of a continuous fire watch. In addition, required fire watches were not performed in areas in which fire detection equipment was out of service and in areas in which fire barriers were degraded. This issue is currently under review by the NRC for disposition.
- During an April 1996 inspection at Palisades Nuclear Plant (Inspection Report 50-255/96-004, Accession No. 9605290105), the NRC inspector noted that the licensee relied on fire watches as compensatory measures for a number of post-fire, safe-shutdown-design deficiencies identified by the licensee pursuant to Appendix R to Part 50 of Title 10 of the Code of Federal Regulations (10 CFR Part 50) while long-term corrective actions were being evaluated. The licensee did not alert the operators to these deficient conditions nor did it provide interim shutdown strategies to operators on how to successfully deal with potential fire damage to required safe-shutdown components. The potential consequences could have been extensive since placing and maintaining the plant in post-fire hot standby could only have been achieved by significant operator actions, troubleshooting, and repair activities to compensate for the post-fire, safe-shutdown-design deficiencies. The sole use of a fire watch for a safe shutdown function which is not adequately protected against fire damage is an inappropriate application of a compensatory measure. This problem resulted in a Severity Level III Violation.
- On October 17, 1996, Arkansas Nuclear One had an event involving a fire in a reactor coolant pump (RCP) and inadequacies associated with the RCP oil collection system. The licensee's initial compensatory measures placed the lift oil pumps in the "stop" condition. This action enhanced the fire protection annunciator procedures by giving additional guidance to the operators when responding to the RCP smoke detector alarm. However, the licensee did not propose interim plant operational measures which would help operators identify and mitigate the consequence of potential oil leakage from the RCP oil system sites not protected by the RCP oil collection system. This problem resulted in a Severity Level III Violation.

#### Discussion

In accordance with 10 CFR 50.48, "Fire protection," each operating nuclear power plant must have a fire protection plan that satisfies Criterion 3 of Appendix A to 10 CFR Part 50. Licensees of plants licensed to operate before January 1, 1979, are required to satisfy the provisions of Appendix R to 10 CFR Part 50, Section III.G, "Fire protection of safe shutdown

capability;" Section III.J, "Emergency lighting;" and Section III.O, "Oil collection system for reactor coolant pump;" and the provisions of Appendix A to the Branch Technical Position of the Auxillary Power Conversion Systems Branch (BTP APCSB) 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976." Licensees of plants licensed to operate after January 1, 1979, are required to satisfy the fire protection provisions of their operating licenses. Generally, these plants have fire protection programs that satisfy the provisions of NUREG-0800, "Standard Review Plan (SRP)," Section 9.5.1, "Fire Protection Program," July 1981.

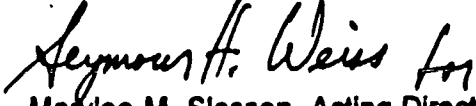
Appendix A to BTP APCSB 9.5-1 specifies that licensees should establish administrative controls for normal and abnormal conditions or such other anticipated operations as modifications (e.g., breaking fire stops/penetration seals, impairment of fire detection and suppression systems) and refueling activities. The controls should be reviewed by appropriate levels of licensee management, and appropriate special actions and procedures, such as fire watches or temporary fire barriers, should be implemented to ensure adequate fire protection and reactor safety.

On November 7, 1991, the NRC issued Generic Letter 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability" (Accession No. 9111040293). This generic letter contained two sections, "Resolution of Degraded and Nonconforming Conditions" and "Operable/Operability: Ensuring the Functional Capability of a System or Component," to be included in Part 9900, "Technical Guidance," of the NRC Inspection Manual. These additions are based upon previously issued guidance.

With respect to fire protection and post-fire, safe-shutdown capability, the licensee may discover a previously unanalyzed condition. Under these conditions, Part 9900, "Technical Guidance: Resolution of Degraded and Nonconforming Conditions," Section 4.4, "Discovery of an Existing But Previously Unanalyzed Condition or Accident," notes that the licensee, upon discovering an existing but previously unanalyzed condition that significantly compromises plant safety, shall report that condition in accordance with 10 CFR 50.72 and shall place the plant in a safe condition. Once a degraded or nonconforming condition of specific structures, systems, or components (SSCs) is identified, an operability determination should be made as soon as possible, consistent with the safety importance of the SSC affected. For SSCs that are outside plant TS, engineering judgment must be used to determine safety significance.

Part 9900, "Technical Guidance: Resolution of Degraded and Nonconforming Conditions," Section 4.6, "Reasonable Assurance of Safety," states that for SSCs which are not expressly subject to TS and which are determined to be inoperable, the licensee should assess the reasonable assurance of safety. If the assessment assures safety, then the facility may continue to operate while prompt corrective action is taken. As stated in Part 9900, the following items are to be considered for such assessments: the availability of redundant or backup equipment, compensatory measures (including limited administrative controls), and the conservatism and margins.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

  
Marylee M. Slosson, Acting Director  
Division of Reactor Program Management  
Office of Nuclear Reactor Regulation

Technical contacts: Darrell Schrum, RIII  
(630) 828-9741  
E-mail: [dls3@nrc.gov](mailto:dls3@nrc.gov)

Rogelio Mendez, RIII  
(630) 829-9745  
E-mail: [rxm@nrc.gov](mailto:rxm@nrc.gov)

Patrick Madden, NRR  
301-415-2854  
E-mail: [pmm@nrc.gov](mailto:pmm@nrc.gov)

Attachment: List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED  
NRC INFORMATION NOTICES

---

Information Notice No.	Subject	Date of Issuance	Issued to
97-47	Inadequate Puncture Tests for Type B Packages Under 10 CFR 71.73(c)(3)	06/27/97	All "users and fabricators" of type B transportation packages [as defined in 10 CFR 171.16(10)(B)]
97-46	Unisolable Crack in High-Pressure Injection Piping	07/09/97	All holders of OLs or CPs for nuclear power reactors
96-44, Supp. 1	Failure of Reactor Trip Breaker from Cracking of Phenolic Material in Secondary Contact Assembly	07/02/97	All holders of OL permits for nuclear power reactors
97-45	Environmental Qualification Deficiency for Cables and Containment Penetration Pigtailes	07/02/97	All holders of OLs or CPs for nuclear power reactors
97-44	Failures of Gamma Metrics Wide-Range Linear Neutron Flux Channels	07/01/97	All holders of OLs or CPs for test and research reactors
97-43	License Condition Compliance	07/01/97	All holders of OLs or CPs for nuclear power reactors
97-42	Management Weaknesses Resulting in Failure to Comply with Shipping Requirements for Special Nuclear Material	06/27/97	All fuel cycle conversion, enrichment, and fabrication facilities

---

OL = Operating License  
CP = Construction Permit

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

original signed by S.H. Weiss for  
 Marylee M. Slosson, Acting Director  
 Division of Reactor Program Management  
 Office of Nuclear Reactor Regulation

Technical contacts: Darrell Schrum, RIII  
 (630) 828-9741  
 E-mail: dls3@nrc.gov

Rogelio Mendez, RIII  
 (630) 829-9745  
 E-mail: rxm@nrc.gov

Patrick Madden, NRR  
 301-415-2854  
 E-mail: pmm@nrc.gov

Attachment: List of Recently Issued NRC Information Notices

Tech Editor has reviewed and concurred on 01/28/97  
 \* - See pervious concurrence

DOCUMENT NAME: 97-48.IN

To receive a copy of this document, indicate in the box: "C" = Copy w/o attachment/enclosure "E" = Copy w/attachment/enclosure "N" = No copy

OFFICE	TECH CONTS	C/PECB:DRPM	AD:DRPM			
NAME	TGreen* PMadden*	AChaffee*	MSlosson* <i>SHW</i>			
DATE	02/03/97 02/04/97	06/23/97	07/ / 197 <i>for</i>			

OFFICIAL RECORD COPY

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Marylee M. Slosson, Acting Director  
Division of Reactor Program Management  
Office of Nuclear Reactor Regulation

Technical contacts: Darrell Schrum, RIII  
(630) 828-9741  
E-mail: dls3@nrc.gov

Rogello Mendez, RIII  
(630) 829-9745  
E-mail: rxm@nrc.gov

Patrick Madden, NRR  
301-415-2854  
E-mail: pmm@nrc.gov

Attachment: List of Recently Issued NRC Information Notices

\* - See pervious concurrence

OFC	PECB:DRPM	SPLB:DSSA	D/DSSA	C/PECB:DRPM
NAME	T. Greene*	P. Madden*	G. Holahan*	A. Chaffee <i>GC</i>
DATE	2/03/97	2/04/97	5/25/97	6/1/97

OFC	D/DRPM
NAME	M. Slosson
DATE	6/ /97

*mkm 6/27/97*

This information notice requires no specific action or written response. If you have any question about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Marylee M. Slosson, Director  
Division of Reactor Program Management  
Office of Nuclear Reactor Regulation

Technical contacts: Darrell Schrum, RIII  
(630) 828-9741  
E-mail: dls3@nrc.gov

Rogelio Mendez, RIII  
(630) 829-9745  
E-mail: rxm@nrc.gov

Patrick Madden, NRR  
(301) 415-2854  
E-mail: pmm@nrc.gov

Attachment: List of Recently Issued NRC Information Notices

\* - See previous concurrence

OFC	PECB:DRPM	SPLB:DSSA	D/DSSA	C/PECB:DRPM
NAME	T. Greene*	P. Madden*	G. Holahan*	A. Chaffee
DATE	2/03/97	2/04/97	5/25/97	6/ /97

OFC	D/DRPM
NAME	M. Slosson
DATE	6/ /97

JKD  
6/11/97

[OFFICIAL RECORD COPY]  
DOCUMENT NAME: G:\TAG\INFIRE.TAG



This information notice requires no specific action or written response. If you have any question about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Marylee M. Slosson, Director  
Division of Reactor Program Management  
Office of Nuclear Reactor Regulation

Technical contacts: Darrell Schrum, RIII  
(630) 828-9741  
E-mail: dls3@nrc.gov

Rogelio Mendez, RIII  
(630) 829-9745  
E-mail: rxm@nrc.gov

Patrick Madden, NRR  
(301) 415-2854  
E-mail: pmm@nrc.gov

Attachment: List of Recently Issued NRC Information Notices

\* - See previous concurrence

OFC	PECB:DRPM	SPLB:DSSA	D/DSSA	C/PECB:DRPM
NAM E	T. Greene*	P. Madden*	G. Holahan*	A. Chaffee
DATE	2/03/97	2/04/97	4/25/97	5/ /97

OFC	D/DRPM
NAM E	M. Slosson
DATE	5/ /97

*mkm 4/30/97*

[OFFICIAL RECORD COPY]  
DOCUMENT NAME: G:\TAG\INFIRE.TAG

This information notice requires no specific action or written response. If you have any question about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Thomas T. Martin, Director  
 Division of Reactor Program Management  
 Office of Nuclear Reactor Regulation

Technical contacts: Darrell Schrum, RIII  
 (630) 828-9741  
 E-mail: dis3@nrc.gov

Rogelio Mendez, RIII  
 (630) 829-9745  
 E-mail: rxm@nrc.gov

Patrick Madden, NRR  
 (301) 415-2854  
 E-mail: pmm@nrc.gov

Attachment: List of Recently Issued NRC Information Notices

\* - See pervious concurrence

OFC	PECB:DRPM	SPLB:DSSA	D/DSSA	C/PECB:DRPM
NAM E	T. Greene*	P. Madden*	G. Holahan	A. Chaffee
DATE	2/03/97	2/04/97	4/2/97	2/ /97

OFC	D/DRPM
NAM E	<del>T. Martin</del>
DATE	2/ /97

[OFFICIAL RECORD COPY]  
 DOCUMENT NAME: G:\TAG\INFIRE.TAG

This information notice requires no specific action or written response. If you have any question about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Thomas T. Martin, Director  
 Division of Reactor Program Management  
 Office of Nuclear Reactor Regulation

Technical contacts: Darrell Schrum, RIII  
 (630) 828-9741  
 E-mail: dls3@nrc.gov

Rogelio Mendez, RIII  
 (630) 829-9745  
 E-mail: rxm@nrc.gov

Patrick Madden, NRR  
 (301) 415-2854  
 E-mail: pmm@nrc.gov

Attachment: List of Recently Issued NRC Information Notices

153

OFC	PECB:DRPM	SPLB:DSSA	D/DSSA	C/PECB:DRPM
NAM E	T. Greene <i>(signature)</i>	P. Madden <i>(signature)</i>	G. Holahan	A. Chaffee
DATE	2/3/97	2/4/97	2/1/97	2/1/97

OFC	D/DRPM
NAM E	T. Martin
DATE	2/1/97

[OFFICIAL RECORD COPY]  
 DOCUMENT NAME: G:\TAG\INFIRE.TAG