

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

February 12, 1988

NRC INFORMATION NOTICE NO. 88-05: FIRE IN ANNUNCIATOR CONTROL CABINETS

Addressees:

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

Purpose:

This information notice is being provided to inform addressees of three occurrences of electrical fires in annunciator control panels supplied by Electro Devices, Inc. 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 do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

Recently, electrical fires have occurred in remote cabinets containing multiple circuit cards for the control of visual and audible annunciator functions in the main control rooms at three nuclear power plants. The annunciator systems for the three plants were provided by Electro Devices, Inc. of St. Louis, Missouri.

On January 28, 1988, while Beaver Valley 2 was in cold shutdown, all control room annunciator alarms were lost. A small fire was detected in a remote annunciator control cabinet, and it was immediately extinguished by the two operators who had been dispatched to investigate. Plant parameters were available throughout the event from other control room instruments and the safety parameter display system. Because of the sustained loss of the annunciators, the licensee declared an alert in accordance with the plant emergency plan. Damaged solid state cards were removed, annunciator capability was restored, and the alert was terminated. The root cause of the fire is under investigation.

On February 1, 1988, while Calvert Cliffs Unit 2 was operating at 100% power, an alert was declared because all control room annunciator alarms were lost. The complete loss of the annunciator system resulted from a fire in a remote control cabinet that provides audible and visual alarm functions for the main control room. The operators were alerted to the fire by the actuation of the automatic fire protection system. The visual indication function of all control room annunciator panels was out of service for 2 hours, and the audible function was not restored for two days. The root cause of the fire is under investigation; however the licensee intends to review the adequacy of circuit protection

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(sub-fusing of branch circuits within the annunciator system) to determine if this contributed to the occurrence of the fire. The unit remained at 100% power throughout the event.

On February 8, 1988, while Rancho Seco was in cold shutdown, all control room annunciator alarms were lost because of a fire in a remote control cabinet that provides audible and visual control functions to the annunciator system. The fire is believed to have originated from a failed subcomponent on a solid state circuit card. The root cause of the fire is under investigation.

Although the NRC's investigation of these events is not yet complete, the following similarities among the events are noteworthy:

- The annunciator systems were provided by the same manufacturer.
- Common to each event was the licensee's lack of specific emergency procedures to address complete loss of the annunciator system.
- None of the licensees have provisions for monitoring ambient temperatures in the control cabinets.
- In the events at Calvert Cliffs and Rancho Seco, the fire teams experienced nausea and dizziness, apparently as a result of inadequate oxygen in the area in which the fire occurred. Licensees thus may wish to review their procedures for fighting small fires in confined areas to determine the adequacy of personnel protection and the need to specify the use of breathing apparatus.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the technical contact listed below or the Regional Administrator of the appropriate regional office.

Charles E. Rossi
Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contact: V. D. Thomas, NRR
(301) 492-0786

E. N. Fields, NRR
(301) 492-1173

Attachment: List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
88-04	Inadequate Qualification and Documentation of Fire Barrier Penetration Seals	2/5/88	All holders of OLs or CPs for nuclear power reactors.
88-03	Cracks in Shroud Support Access Hole Cover Welds	2/2/88	All holders of OLs or CPs for BWRs.
88-02	Lost or Stolen Gauges	2/2/88	All NRC licensees authorized to possess gauges under a specific or general license.
88-01	Safety Injection Pipe Failure	1/27/88	All holders of OLs or CPs for nuclear power reactors.
86-81, Supp. 1	Broken External Closure Springs on Atwood & Morrill Main Steam Isolation Valves	1/11/88	All holders of OLs or CPs for nuclear power reactors.
87-67	Lessons Learned from Regional Inspections of Licensee Actions in Response to IE Bulletin 80-11	12/31/87	All holders of OLs or CPs for nuclear power reactors.
87-66	Inappropriate Application of Commercial-Grade Components	12/31/87	All holders of OLs or CPs for nuclear power reactors.
87-28, Supp. 1	Air Systems Problems at U.S. Light Water Reactors	12/28/87	All holders of OLs or CPs for nuclear power reactors.
87-65	Plant Operation Beyond Analyzed Conditions	12/23/87	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
CP = Construction Permit

(sub-fusing of branch circuits within the annunciator system) to determine if this contributed to the occurrence of the fire. The unit remained at 100% power throughout the event.

On February 8, 1988, while Rancho Seco was in cold shutdown, all control room annunciator alarms were lost because of a fire in a remote control cabinet that provides audible and visual control functions to the annunciator system. The fire is believed to have originated from a failed subcomponent on a solid state circuit card. The root cause of the fire is under investigation.

Although the NRC's investigation of these events is not yet complete, the following similarities among the events are noteworthy:

- . The annunciator systems were provided by the same manufacturer.
- . Common to each event was the licensee's lack of specific emergency procedures to address complete loss of the annunciator system.
- . None of the licensees have provisions for monitoring ambient temperatures in the control cabinets.
- . In the events at Calvert Cliffs and Rancho Seco, the fire teams experienced nausea and dizziness, apparently as a result of inadequate oxygen in the area in which the fire occurred. Licensees thus may wish to review their procedures for fighting small fires in confined areas to determine the adequacy of personnel protection and the need to specify the use of breathing apparatus.

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for 2 hours, and the audible function was not restored for two days. The root cause of the fire is under investigation; however the licensee intends to review the adequacy of circuit protection (sub-fusing of branch circuits within the annunciator system) to determine if this contributed to the occurrence of the fire.

On February 8, 1988, when Rancho Seco was in cold shutdown, its control room experienced a loss of all annunciator alarms because of a fire in a remote control cabinet that provides audible and visual control functions to the annunciator system. The fire is believed to have originated from a failed subcomponent on a solid state circuit card. The root cause of this fire is under investigation.

Although the NRC's investigation of these events is not yet complete, the following similarities among the events are noteworthy:

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