NRC Form 368 7 (983)										LICENSEE EVENT REPORT (LER)							U.S. NUCLEAR REGULATORY COMMISSION APPROVED OMB NO. 3150-0104 EXPIRES: 8/31/88						
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During the performance of the 18 month surveillance test of the containment cable vault CO₂ system on March 12, 1986, it was discovered that the system was inoperable. At the time of discovery a fire watch was posted for the testing. This fire watch was continued until the system was restored to an operable status.

As the determination of the cause was weather related and it is reasonable to believe that the system was inoperable for a period of time greater than that allowed by Technical Specifications, this event has been determined to be reportable per 10CFR50.73(a)(2)(i)(B).

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TEXT (& more space is required, use additional NRC Form 385A's) (17)

BACKGROUND

On March 12, 1986 during the performance of the 18 month surveillance test of the containment cable vault CO₂ fire suppression system (EIIS code, KQ), it was discovered that the system was inoperable. A fire watch was posted until the system was restored to an operable status.

The initial problem was with the electric loops (CO₂ bottle actuators), which failed to actuate CO₂ release during the flow test.² These electric loops were replaced and the CO₂ was successfully discharged. However, a pneumatic switch failed to shutdown the supply and exhaust fans. This switch was reworked and the system was then successfully retested and put back in service.

Later that evening the Electrical Maintenance supervisor had the system removed from service to rework/replace portions of the electrical system and another retest was done the following day. At this time the system was declared operable and put back in service. A fire watch was posted during this period of time.

REPORTABILITY

Sue to the fact that the failure of the electric loops was attributed to the weather, the event has been determined to be reportable per 10CFR50.73(a)(2)(i)(B). This determination is based upon the fact that the length of time the system was out of service is unknown, but it is reasonable to assume it was for a period of time greater than that allowed by Technical Specification 3.22.b.2.

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ROOT CAUSE

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During the performance of the surveillance test, two components in the system failed to operate properly, the electric loops and the pneumatic switch. As both of these items are located outside the cable vault and are exposed to the weather, the determination was made that the failure of both components was due to the weather. This was due to the discovery of moisture and corrosion on the contacts of both components.

SAFETY SIGNIFICANCE

A review of the fire protection features in the Containment Cable Vault as well as the fire brigade strategies was performed and it was concluded that the lack of automatic actuation of the CO₂ system did not create a significant safety concern. This conclusion is based on several factors which are detailed below.

There is a smoke detection system installed in the Containment Cable Vault which annunciates in the Control Room as well as actuates the CO₂ discharge cycle. The smoke detection annunciation to the Control Room as well as the smoke detectors operability was not impaired in the incident described by the LER. Therefore, although the automatic actuation feature of the CO₂ system was inoperable, the smoke detection system in the containment cable vault was capable of detecting a fire in its incipient stages and providing an alarm in the Control Room. The notification in the Control Room permits a timely response by an operator or the station fire brigade.

The station fire brigade is provided with a fire fighting strategy for major plant areas, including the containment cable vault. The strategy for the containment cable vault provides instructions concerning entering the area, discharging the reserve supply of CO_2 if needed, and using portable and manual suppression methods as a back-up to the CO_2 system. If these strategies were followed, they would mitigate the effects of the lack of automatic discharge. In addition, if the ventilation fans had remained operable instead of shutting down when the CO_2 system discharged, the resulting conditions would have benefited fire fighting operations by increasing the visibility within the room, and permitting the brigade to attack the seat of the fire with manual methods. It should be noted that cables in the containment cable vault are either IEEE-383 rated or are covered by flammastic. These features tend to reduce fire spread and provide additional time for fire suppression.

With the present design, the containment cable vault CO₂ system can be manually discharged at the CO₂ cylinders. The arrangement of this manual discharge is very similar to the operation of a portable extinguisher. This method of discharge is not at all dependent on an electrical circuit and was

NRC Form 366A (9-83)	LICENSEE EVENT REPORT (LER) TEXT CONTINUATION	U.S. NUCLEAR REGULATORY COMMISSION APPROVED OMB NO. 3150-0104 EXPIRES: 8/31/88				
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Haddam Neck

not affected by the incident described in the LER. The containment cable vault CO₂ system is equipped with a redundant supply of CO₂; a "second shot" (reserve) capability. This is important because if the supply and exhaust fans did not shut down (which would have been the case), the initial CO₂ concentration would have been quickly depleted. The effect that continuous ventilation in the containment cable vault would have had on the CO₂ concentration is difficult to predict, since CO₂ is denser than air and the air exchange rate is approximately 10 air changes per hour. However, the design concentration of the CO₂ system is 50% which is intended for extinguishment of deep seated fires. A lesser concentration will still provide fire control and initially reduce or stop flamming combustion. In addition, the "second shot" (which can be discharged manually) is also designed for 50% concentration and would unquestionably increase the CO₂

In view of these factors, this incident did not significantly degrade plant safety.

CORRECTIVE ACTION

During the period of time the system was out of service a fire watch was posted in the cable vault.

Repairs to the CO_2 system were initially the replacement of the electric loops and rework of the pneumatic switch. Upon further consideration the decision was made to rework/replace portions of the electrical system and upon successful completion was returned to service.

The result of the rework of the electrical system was that the pneumatic switch was cleaned and re-installed. The associated fan contactor was replaced as this was found hung up. Additionally, the selector switch, abort switch and indicator lights were replaced. The system was then functionally tested and upon successful completion of this test on March 13, 1986, the system was returned to service.

Near term corrective action will be to evaluate increasing the surveillance frequency from the present 18 month requirement.

Long term action will be to evaluate the need for a redesign of the present system.



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HADDAM NECK PLANT RR#1 • BOX 127E • EAST HAMPTON, CONN. 06424

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June 10, 1986

U.S. Nuclear Regulatory Commission Document Control Desk Washington, D. C. 20555

Reference: Facility Operating License No. DPR-61 Docket No. 50-213 Reportable Occurrence LER 50-213/86-016-01

Gentlemen:

This letter forwards the Licensee Event Report 86-016-01, committed to be submitted within 60 days in Licensee Event Report 86-016-00.

Very truly yours,

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Richard H. Graves Station Superintendent

RHG:TJB/1ac Attachment: LER 86-016-01

cc: Dr. T. E. Murley, Region I