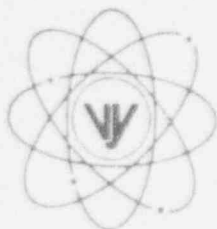


# VERMONT YANKEE NUCLEAR POWER CORPORATION



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REPLY TO  
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March 3, 1993  
BVY 93-26

United States Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

References: a. License No. DPR-28 (Docket No. 50-271)

Subject: Use of Closed Circuit Television System (CCTV) to Establish a Continuous  
Fire Watch at Vermont Yankee

Dear Sir:

During a telephone conversation conducted on January 19, 1993, NRC/NRR provided verbal approval for utilization of a Closed Circuit Television (CCTV) system to establish a continuous fire watch to monitor several penetrations with indeterminate fire barrier seals located on the west wall of the torus area of the Vermont Yankee Reactor Building. Implementation of such a system was proposed by Vermont Yankee as an alternative to a direct, on-location continuous fire watch to maintain dose rates to our workers in accordance with ALARA principals. Vermont Yankee has since implemented this CCTV system for the west wall torus area penetrations.

Also in the January 19, 1993 telecon Vermont Yankee was requested to provide a followup submittal to NRC which provided the rationale and justification for use of the CCTV system. Attached to this letter please find the requested information.

Should your staff have any further questions with regard to this issue, please contact this office.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

*Leonard A. Tremblay, Jr.*  
Leonard A. Tremblay, Jr.  
Senior Licensing Engineer

cc: USNRC Region I Administrator  
USNRC Resident Inspector - VYNPS  
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## USE OF A CLOSED CIRCUIT MONITORING SYSTEM TO ESTABLISH A CONTINUOUS FIRE WATCH

The use of a closed circuit television (CCTV) system precludes personnel radiation exposure that would be incurred during a continuous fire watch. Four closed circuit television cameras, connected to four constantly attended monitors in the RCIC Room, will be used to observe the degraded barriers. The monitors are being observed by the existing continuous fire watch for the RCIC area. This method is currently being used to meet the requirements for a continuous fire watch as required by Technical Specification section 3.13E.

Reference 1 describes how utilities are using video cameras to reduce radiation exposure during routine and specialized tasks.

### Technical Specification Requirement

Vermont Yankee Technical Specification section 3.13E. states that "From and after the date a vital fire barrier penetration seal is not intact, a continuous fire watch shall be established on at least one side of the affected penetration within one hour."

### Discussion

The potentially degraded penetrations in the Torus Catwalk area were discovered on January 12, 1993. The affected barrier is the west wall of the Torus area adjacent to the Low Pressure Heater Bay area of the Turbine Building. As required by Technical Specifications a qualified fire watch was established within one hour.

The Torus area side of the barrier has an average combustible load of 7,284 Btu/sq. ft. consisting mainly of cable insulation in horizontal cable trays. Ionization detectors are installed above cable trays and heat detectors are installed above the torus. These detectors alarm in the Control Room.

The Turbine Building Low Pressure Heater Bay area side of the barrier has an average combustible load of 33,585 Btu/sq. ft. with the combustibles located mainly on the (opposite) west wall of the Turbine Building. Furthermore, this area is a locked high radiation area generally free of any work activities during plant operation.

The Turbine Building side of the wall is a locked high radiation area with general area dose rates of 100 mR/hour. The opposite side of the barrier is the Torus which has a general area dose rate of up to 540 mR/week. A continuous fire watch posted in this area of the Torus would be expected to accumulate approximately 2 R/month. Vermont Yankee's average monthly exposure rate is approximately 8 R/month. This single fire watch would increase the total dose 25%. An alternative to a person performing a continuous fire watch at this location would therefore be good ALARA practice.

Four high resolution closed circuit television cameras are used for the Torus fire barrier penetration fire watch. Four viewing monitors are located in the nearby RCIC area. The cameras are positioned to view the areas and the affected penetrations. The assigned fire watch person in the RCIC Room has specific instructions to contact the Control Room should a fire be noted on the monitors or a monitor fail to function.

The use of television cameras as fire watches have been previously accepted for Vermont Yankee by the NRC (NRC Inspection Report No. 50-271/88-20) and for other utilities (e.g., NRC Letter to Power Authority State of New York, TAC No. M83014, dated April 2, 1992).

#### Equipment Specifications & Surveillance

Four high quality cameras and monitors are utilized. Surveillance of the system will be continuous and any equipment problems rapidly detected. No special testing will be required.

#### Radiation Effects

The effects of radiation on the video equipment has not been tested although similar equipment has performed satisfactorily in the past when used in this area of the plant. Any degradation in visual signal would be readily detected.

#### Conclusions

The posting of a continuous fire watch to monitor the Torus west wall degraded fire barrier penetration seals by using a closed circuit television system along with the existing fire detection system provides a level of protection equivalent to posting a continuous fire watch directly at the degraded seal location. The relocating of the continuous fire watch directly outside of the affected barrier does not reduce the level of protection required by the Technical Specifications and conforms to accepted ALARA practices.

#### References

1. EPRI NP-6882 "Video Camera Use at Nuclear Power Plants", dated August 1990.