

UNITED STATES OF AMERICA  
 NUCLEAR REGULATORY COMMISSION

In the Matter of

MAINE YANKEE ATOMIC POWER  
 COMPANY

(Maine Yankee Atomic Power Plant)

}  
 }  
 } Docket No. 50-309  
 }

EXEMPTION

I.

The Maine Yankee Atomic Power Company (the licensee) is the holder of Facility Operating License No. DPR-36 which authorizes operation of the Maine Yankee Atomic Power Plant. This license provides, among other things, that it is subject to all rules, regulations and Orders of the Commission now or hereafter in effect.

The facility comprises one pressurized water reactor at the licensee's site located in Lincoln County, Maine.

II.

On November 19, 1980, the Commission published a revised Section 10 CFR 50.48 and a new Appendix R to 10 CFR 50 regarding fire protection features of nuclear power plants (45 F.R. 76602). The revised Section 50.48 and Appendix R became effective on February 17, 1981. Section III of Appendix R contains fifteen subsections, lettered A through O, each of which specifies requirements for a particular aspect of the fire protection features at a nuclear power plant. One of these fifteen subsections, III.G., is the subject of this exemption request. III.G. specifies detailed requirements for fire protection of the equipment used for safe shutdown by means of separation and barriers (III.G.2). If the requirements for separation and barriers could not be met in an area, alternative safe shutdown capability, independent of that area and equipment in that area, was required (III.G.3).

By letter dated March 5, 1982 the licensee requested an exemption from the requirements of Section III.G.3b to the extent that it requires the installation of a fixed fire suppression system in the control room. In support of this request the licensee notes the existing fire protection features, the fact that the control room is continuously manned and the potentially adverse impact on equipment and personnel occupancy of an inadvertent initiation of a fixed suppression system.

### III.

We have reviewed the licensee's exemption request. The control room is enclosed by walls, floor and ceiling of reinforced concrete construction, sufficient to achieve a 3-hour fire rating. Openings into the room are protected by fire doors, dampers and fire rated penetration seals. Safe shutdown equipment in the room consists of the main control consoles and cabinets, including redundant control cables, indicating instruments and relays.

Existing fire protection consists of a smoke detection system located throughout the room and inside the control cabinets. This protection is supplemented by portable fire extinguishers and manual hose stations. The fire loading in the control room is low. The room is continuously manned. In the event the control room becomes uninhabitable due to smoke or heat, an alternate capability to achieve safe shutdown, outside the control room, exists.

The intent of Section III.G is to require an acceptable level of fire safety to assure the maintenance of safe shutdown capability. Because the control room is continuously manned and fire extinguishing equipment is located in the control room, there is reasonable assurance that a fire

would be promptly extinguished. Therefore, the installation of a fixed fire suppression system will not significantly increase the level of fire protection in the control room and the exemption requested by the licensee should be granted.

IV.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, an exemption is authorized by law and will not endanger life or property or common defense and security and is otherwise in the public interest and hereby grants an exemption from the requirements of Section III.G.3b of Appendix R to 10 CFR 50 to the extent that it requires the installation of a fixed fire suppression system in the control room at Maine Yankee.

The NRC staff has determined that the granting of this Exemption will not result in any significant environmental impact and that pursuant to CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with this action.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert A. Purple, Acting Director  
Division of Licensing

Dated at Bethesda, Maryland  
this 11th day of August, 1982.

## Evaluation of Fire Protection Exemption Request

### Maine Yankee - Cable Vault

#### Introduction

By letter dated March 5, 1982, Maine Yankee Atomic Power Company the licensee, requested exemptions from Section III.G, "Fire Protection of Safe Shutdown Capability," of Appendix R to CFR 50 for two areas of the Maine Yankee Plant. This evaluation addresses the requested exemption from Sections III.G.2 and III.G.3, for the Cable Vault, to the extent that it requires physical separation between redundant trains or the installation of an alternate or dedicated shutdown capability.

#### Discussion

The Cable Vault is a below grade, rectangular room that is completely enclosed with concrete construction. Safe shutdown components located in the vault consist of the control cables for redundant divisions of safety related equipment.

Existing fire protection for the vault consists of a ceiling mounted smoke detection system, a smoke detector in the ventilation supply duct, a total flooding carbon dioxide fire suppression system, and a manually activated water spray system designed to provide coverage for the cables.

#### Evaluation

Our concern is that a single fire can affect cables of redundant trains, thus jeopardizing safe shutdown. In our Fire Protection Safety Evaluation Report, dated April 24, 1978, we concluded that the existing fire protection did not provide adequate assurance that redundant safe shutdown systems will not be disabled by a fire. Despite the licensee's commitment to keep the vault free of transient flammables, the in situ fire loading associated with the existing cables represents a significant fire hazard. In addition the separation between the cables for the redundant safe shutdown equipment has not been identified and therefore is assumed to be quite small allowing simultaneous involvement of redundant cables in any fire.

Although the existing fire protection in this area includes automatic detection and suppression, there would be a time delay between the start of a fire and the release of a fire suppression agent from the existing fire protection system. This time delay could result in loss of both redundant trains. The request for exemption from III.G.3. leads to the conclusion that no method for safe shutdown independent of this area presently exist. Therefore, separation between trains or alternate safe shutdown capability (as required by Section III.G.) should be established to provide assurance that the safe shutdown capability will be maintained until the fire has been extinguished.

### 3.4 Conclusion

Based on our evaluation we conclude that the existing fire protection features of the Cable Vault will not provide an adequate level of safety because both trains of equipment necessary to achieve safe shutdown can be affected by a single fire. Therefore, the licensee's request for exemption should be denied.