Millstone Power Station Unit 3 Safety Analysis Report

Fire Protection Evaluation Report

FIRE PROTECTION EVALUATION REPORT

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MPS-3 FPER

NOTE: REFER TO THE CONTROLLED PLANT DRAWING FOR THE LATEST REVISION.

FIRE PROTECTION EVALUATION REPORT

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SECTION 1—INTRODUCTION

1.1 PURPOSE

This Fire Protection Evaluation Report (FPER) represents the operating license (OL) fire protection program submittal for the Northeast Nuclear Energy Company's Millstone Unit 3 (Millstone 3). This evaluation, originally submitted in June 1977, has been revised to be responsive to Nuclear Regulatory Commission (NRC) letter (D. G. Eisenhut to W. G. Counsil), dated October 21, 1981. This letter requested that the Millstone 3 OL fire protection program submittal provide a comparison with the provisions of 10 CFR 50, Appendix R, which became effective on February 17, 1980, and applies to operating plants licensed before January 1, 1979.

NRC has also issued additional guidance to operating plants in Generic Letter 81-12 (February 20, 1981). The information requested in Generic Letter 81-12 has been taken into account in this report. Additional NRC guidance is addressed in the Millstone Unit 3 Branch Technical Position 9.5-1 Compliance Report.

1.2 REPORT ORGANIZATION

The FPER is organized as follows.

Section 2 provides the historical background for fire protection design of Millstone 3. The fire protection program, including administrative aspects, such as fire brigade organization and training, is described in Section 3. Fire protection features are described in Section 4. The results of the fire hazards analysis, including designation of fire zones, are presented in Section 5. Sections 6 through 10 present information responsive to fire protection guidelines, Branch Technical Position (BTP) CMEB 9.5-1 (NUREG-0800), Rev. 2-1981, Sections C.5.b. and C.5.c., under the headings of safe shutdown evaluation, support systems, resolution of safe shutdown evaluation problem areas, and operator actions available following a fire. Conclusions are presented in Section 10.

Two appendixes are included in order to provide comparisons with certain regulatory documents.

Appendix A, which was included in the previous submittals to provide an item-by-item position statement on BTP APCSB 9.5-1, Appendix A, (NRC letter R. S. Boyd to D. C. Switzer, September 30, 1976) has been deleted.

Appendix B identifies areas in which the Millstone 3 design does not fully conform to the most recent fire protection guidelines, BTP CMEB 9.5, Rev. 2-1981 and provides a justification for those deviations. The differences noted should in no way be necessarily construed as a variance from regulations; rather, they are a documentation of deviations from acceptance criteria as stated in the NRC's internal review guide (Standard Review Plan) for the FSAR.

Appendix C provides a list of each item of 10 CFR 50, Appendix R, Section III, and indicates the location within this report where each is addressed.

SECTION 2—HISTORICAL BACKGROUND

On September 30, 1976 (NRC letter, R. S. Boyd to D. C. Switzer), Northeast Nuclear Energy Company (NNECo) was requested by the NRC to reevaluate its fire protection program in accordance with Appendix A to BTP APCSB 9.5-1, Guidelines for Fire Protection for Nuclear Power Plants Docketed prior to July 1, 1976. On June 13, 1977, NNECo submitted to the NRC the original issue of this report, Millstone Nuclear Power Station Unit 3, Fire Protection Evaluation, which documented the detailed analysis performed for all fire areas. The report indicated the extent of compliance of the design with Appendix A to APCSB 9.5-1.

On February 20, 1980 (letter, W. G. Counsil to O. D. Parr), NNECo identified to the NRC that "with unit construction being approximately 33 percent complete, many fire protection design features have already been incorporated. Furthermore, since no additional guidance applicable to our docket has been forwarded, construction continues under the assumption that we comply with fire protection requirements satisfactorily. However, if compliance is not recognized, a timely response is requested to prevent costly backfits and subsequent delays at later, more critical, construction stages."

On October 21, 1981 (letter, D. G. Eisenhut to W. G. Counsil), NNECo was requested by the NRC to provide a comparison in the Fire Protection Evaluation with Appendix R to 10 CFR 50, Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979 (See Appendix C).

On January 31, 1983 (Letter, D.G. Eisenhut to W.G. Counsil), NNECO was requested by the NRC to provide a comparison in the Fire Protection Evaluation with BTP CMEB 9.5-1 (NUREG 0800), July 1981, specifically identifying deviations. The fire protection design basis for Millstone 3 is as stated in this report, which indicates the degree of compliance with this version of BTP CMEB 9.5-1.

SECTION 3—ADMINISTRATION

3.1 FIRE PROTECTION PROGRAM

A fire protection program has been established at the Millstone 3 Nuclear Power Plant. This program establishes the fire protection policy for the protection of structures, systems, and components important to the safety of the plant and the procedures, equipment, and personnel required to implement the program.

The fire protection program is under the direction of an individual who has been delegated authority commensurate with the responsibilities of the position, and who has available staff personnel with knowledge in both fire protection and nuclear safety.

The fire protection program extends the concepts of defense-in-depth to fire protection in areas important to safety, with the following objectives:

to prevent fires from starting;

to detect rapidly and control and extinguish promptly those fires that do occur; and

to provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant.

3.2 FIRE PROTECTION ORGANIZATION

The organization and individual responsibilities for elements of the Millstone Unit 3 Fire Protection Program are contained in the Fire Protection / Appendix R (Fire Safe Shutdown) Program Procedure. Refer to Figure 6-1 of the Fire Protection Program Manual to identify the individual responsible for specific program elements and the appropriate implementing procedures.

3.3 FIRE BRIGADE AND TRAINING

The Millstone Power Station Fire Brigade consists of a site fire brigade. As a minimum, each fire brigade per shift consists of five members, including the Shift Fire Brigade Leader, who is knowledgeable in plant safety-related system operations for their assigned unit. When a specific unit does not have a Fire Brigade Shift Leader, a Fire Brigade Advisor from that unit is required in addition to the five member Fire Brigade. The five members of each shift fire brigade are trained in fire fighting techniques and are able to effectively fight and control all postulated plant fires. Supplemental assistance is also available from local fire departments.

Plant procedures regarding fires state that, if conditions warrant, the local public fire departments shall be called. Within a 5 mile radius of the plant, there are numerous local volunteer fire companies. Letters of commitment to supply public fire department assistance have been obtained from these fire companies.

An extensive fire-fighting training program has been developed. Section NTM 7.205 of the Nuclear Training Manual establishes the requirements of, and responsibilities for, the training of fire-fighting personnel. This program is responsive to the requirements of BTP CMEB 9.5-1, Position C.1, C.2, and C.3, and its development is guided by the appropriate codes and standards referenced therein.

Since the local fire departments are included in the overall Fire Protection Evaluation, they will be included in the training program. Periodic discussions held with them cover areas of access, equipment compatibility, and onsite direction. There is an ongoing training program to instruct the local fire departments in subjects pertinent to the plant (e.g., radiation protection, plant layout, etc.) to enhance their effectiveness. Periodic fire drills are conducted with the participation of the local fire departments in order to evaluate the effectiveness of the training program.

3.4 QUALITY ASSURANCE

It is the intent of Millstone Station to include in the Quality Assurance Program those areas of the Fire Protection Evaluation that are identified in BTP CMEB 9.5-1, Position C.4.

The Quality Assurance Program has been applied to the fire protection systems, components, and programs providing fire detection and suppression capabilities to those areas of the plant that are important to safety.

FPER FIGURE: 3-1 FIRE PROTECTION ORGANIZATIONAL CHART (DELETED)

SECTION 4—PLANT DESIGN FEATURES

4.1 FIRE PROTECTION

4.1.1 SITE WATER SUPPLY SYSTEM

Water for fire protection is supplied by extending the fire protection piping system from Millstone 1 and 2 to include Millstone 3, as shown on Figure 4-1.

The underground fire protection water supply consists of 12 inch cement lined iron pipe in a loop arrangement around Millstone Units 1, 2 and 3. Post-indicating type valves in the piping loop permit partial pipeline isolation without interrupting service to the entire system.

The supply system services individually valved lines feeding fixed pipe water suppression systems (sprinklers, water spray, and standpipes) throughout the plant. Hydrants are located on an approximate 250 foot spacing arrangement or are otherwise strategically located for fire fighting purposes. Hydrant hose houses, equipped for 2.5 and 1.5 inch hose stream service, are located near the hydrants.

The Millstone Station Fire Water Loop is supplied from two 250,000 gallon ground level suction tanks. The tanks are automatically filled through a domestic water line fed from the city water system. This line is a 12 inch city feed with a 10 inch meter, bypass line, and two backflow preventers. The city supply is capable of refilling the fire water tanks in eight hours. Valves on the interconnected tank suction lines provide the capability to manually isolate each tank in the event of failure of a tank or its piping system. The fire protection water supply system is independent of service and sanitary water piping systems.

Two fire pump houses contain the station's three fire pumps, each rated at 2,000 gpm at 100 psi. All three pumps can take suction from either or both tanks and have individual connections to the underground supply system. All three fire pumps have separate control panels supplied from separate power supplies. Pump running and trouble signals for all pumps as well as fire water tank level monitoring indications are available in the Unit 3 Control Room.

The Unit 3 (Building 123) Fire Pumphouse contains the electric fire pump (M7-8), the diesel driven fire pump (M7-7), and the 50 gpm electric jockey pump (M7-11). The Unit 2 (Building 124) Fire Pumphouse is a separate structure adjacent to Building 123 and contains the other electric fire pump (P-82). These pumphouses are adjacent and independent of each other with the exception of sharing a common barrier.

System operation is such that the 50 gpm electric jockey pump (M7-11) maintains system pressure by automatically starting when line pressure drops to approximately 105 psig and will run until pressure reaches 120 psig as indicated by a line pressure switch. An electric interlock between the jockey pump and the M7-7 and M7-8 pump exists which stops the jockey pump when either pump starts. A hydropneumatic tank is provided in the system to prevent short cycling of the jockey pump. The electric driven fire pump (P-82) is driven by an AC motor from the 480V load center MP2 Bus 22D. This pump is activated by a pressure switch set at 95 psig. In

the event this switch or pump fails to operate and line pressure continues to drop, the electric pump (M7-8) is activated by a separate pressure switch set at 85 psig. This pump is driven by an AC motor powered from the MP3 480V Load Center Bus 32Q. In the event this switch or pump fails to operate or system demand overwhelms this capacity and line pressure continues to drop, the Diesel Driven Fire Pump (M7-7) is activated by a separate pressure switch set at 75 psig. The diesel driven fire pump is electrically independent with its own self contained redundant battery system for starting. A battery charger is provided for maintaining the batteries charged.

The P-82 motor driven pump automatically stops after system pressure is maintained at 100 psi for 5 minutes. Once started, the M7-7 and M7-8 fire pumps remain in operation until manually stopped.

If a major fire in any location of Millstone Unit 3 should occur, the combined water tanks and makeup water capacity would provide an adequate water supply for Millstone Unit 3. The necessary pressure and flow would be maintained through the use of any two of the three station fire pumps.

4.1.2 FIXED SUPPRESSION SYSTEMS

4.1.2.1 Sprinkler and Waterspray Systems

Fixed sprinkler and water spray systems, provided in various areas of the plant where in situ combustible loading warrants such protection, are designed in conformance with either National Fire Protection Association (NFPA) Standard Number 13, Standard for the Installation of Sprinkler Systems or NFPA Standard Number 15, Standard for Water spray Fixed Systems for Fire Protection.

Fixed water systems are provided in the following design arrangements:

- automatic and manual operating, wet pipe sprinkler;
- automatic and manual operating water spray; and
- automatic operating preaction sprinkler.

The individual system types and general locations are indicated in Table 4-1. Figure 4-1 shows the general layout of these systems.

4.1.2.1.1 Automatic and Manual Operating, Wet Pipe Sprinkler Systems

Automatic and manual closed head, wet pipe design sprinkler systems have an alarm check valve or alarm flow switch. All systems are provided with an outside screw and yoke (OS&Y) isolation valve between the supply connections and system distribution piping.

Manual closed head sprinkler systems utilized in the emergency generator enclosures are dry pipe systems to avoid the possibility of water damage to generator system components.

4.1.2.1.2 Automatic and Manual Operating Water Spray Systems

Open spray head, deluge type water spray systems are of both automatic and manual operating design. All systems have a deluge valve located between the supply header and the distribution piping. An OS&Y isolation valve is used on all systems. Upon actuation of the deluge valve, water flows into the distribution piping and discharges from all spray heads.

Automatic operation is initiated by a single zone heat detection (rate compensated or line type) circuit installed in the hazard area.

Manual operation of the automatic systems is provided electrically via pull stations located at the deluge valve control panel (main and normal transformers), turbine building under truck bay (Hydrogen seal oil unit), the valve pit (reserve transformers) or outside the enclosure (lube oil reservoir and conditioner). Each deluge valve can be mechanically actuated at the deluge valve itself.

The water spray systems for the charcoal filter assemblies in the auxiliary building are manually-operated deluge type systems employing open spray nozzles located within the filter casing. A manually-operated, recyclable deluge valve is provided between the supply header and the distribution piping. The manual deluge valve is operated by local manual electric pushbuttons. Upon manually opening the OS&Y isolation valve and manually initiating deluge valve opening, water flows into the distribution piping and discharges from all spray heads for a controlled period of time followed by automatic closing of the deluge valve.

The Technical Support Center charcoal filter assembly is fitted with an external connector allowing the internal deluge piping and open spray nozzles to be supplied by manually connecting a hose from a hose rack in the vicinity.

A heat detection system within the filter casings provides early warning detection of a fire. The detectors alarm locally at the Allison Panels, at the local building zone alarms panel and at the main fire protection panel in the control room.

4.1.2.1.3 Automatic Operating Preaction Sprinkler System

A closed head automatic preaction sprinkler system protects the turbine generator bearing enclosures and the oil supply piping in the immediate area of the bearings.

A deluge valve is located between the supply header and the distribution piping. Upon actuation of the deluge valve, water flows into the distribution piping and discharges only from the fused sprinkler heads. An OS&Y isolation valve is located upstream of the deluge valve.

Rate compensated heat detectors in the hazard areas automatically actuate the deluge valve. Manual valve operation capability is provided electrically via a pull station located at the deluge control panel. The deluge valve can be mechanically operated at the valve itself. The distribution piping system is charged with air. This air pressure is sensed by a pressure switch to detect any leaks in the system piping and also to provide a predischarge alarm. Air supply is from a valved connection to the service air supply in the building. An air maintenance device overcomes pressure loss from minor leaks. Upon loss of air pressure in the distribution piping system from an open sprinkler head or pipe leak, a "low-air" pressure signal is transmitted to the deluge valve control panel and to the control room.

4.1.2.2 Carbon Dioxide Systems

Several areas of the plant have low pressure carbon dioxide (CO_2) suppression capability protection. This protection is used as the primary means of suppression in these areas.

Supply for each zone is from a 45 ton, refrigerated bulk storage vessel south of the main steam valve enclosure. This storage unit has sufficient volume to provide a two-shot, total flooding for the largest protected area (control building, cable spreading area).

Distribution of CO_2 to each protected area is accomplished through a network of discharge piping, pneumatically operated master and area selector valves, zone control panels and nozzles. Figure 4-1 shows the general schematic layout of this equipment.

Low pressure CO₂ suppression systems in the plant are of four basic designs:

- automatic operation, total flood;
- automatic operation, local application;
- manual operation; total flood; and
- manual operation, local application/total flood.

Table 4-2 indicates each protected area, the type of system, and actuation methods.

The total flood systems attain and maintain adequate CO_2 concentrations as required by the nature of the specific hazard based on the intent of NFPA Standard Number 12 guidelines. The minimum design concentrations are obtained within 1 minute for surface fires and within 7 minutes for deep seated fires at a rate not less than that required to develop a concentration of 34 percent in 1 minute for the fuel oil tank vaults and 30 percent in 2 minutes for all other total flood areas. This discharge is considered the "Initial Discharge." To maintain the desired concentrations for a twenty minute soak time and to compensate for normal agent leakage from the area, an "Extended Discharge" system is utilized.

The design of the local application system for the fuel oil pump pit in the auxiliary boiler building has been based on the rate by volume method. The duration was extended to allow for cooling of metal parts in the pump pit area to prevent oil vapor re-ignition.

The design of the CO_2 suppression system for the alterex/generator is a manual local application/total flood system. The external bearing areas of the alterex casing is a local application system with the internal of the alterex casing a total flood system.

In all electrical cable hazard areas, the total flooding CO₂ systems are manually actuated.

Manual system actuation is accomplished by the actuation of both cross-zoned smoke detector strings and opening of the predischarge timer "lockout" ball valve to initiate CO_2 discharge. Both area detection cross-zone signals together provide one of the two inputs necessary to discharge CO_2 . The other input is provided by the manual opening of the predischarge timer "lockout" ball valve. Upon actuation of the first cross zone, an alarm signal is transmitted to the local alarm panel and the Control Room. Upon actuation of the second cross zone, an alarm signal is transmitted to the local alarm panel and to the Control Room, as well as generating an alarm condition within the local Chemetron panel. With both cross-zones in alarm or with the predischarge timer "lockout" ball valve open, a horn actuates within the affected area and a strobe light actuates outside each of the access doors to the area. Upon discharge of CO_2 in the protected area, ventilation damper closure and fan shutdown signals are initiated either from both zones in alarm in the Chemetron panel (cross zones in alarm and ball valve open) or CO_2 discharge pressure, a local pneumatic air horn sounds in the area, and an odorizer is released indicating CO_2 discharge.

In the combustible liquid hazard areas, automatic system actuation is accomplished by the operation of a single zone, rate compensated heat detector circuit. Operation of a detector will initiate transmission of a discharge alarm to the local Chemetron panel, building alarm panel, and the main fire protection console in the Control Room, and will actuate predischarge alarms in the affected area. Following a time delay, CO_2 discharge will then occur.

The manual operating local application areas, as well as all other manual and automatic operating CO_2 suppression systems, are or can be actuated by manual key station devices located outside the hazards areas or by the key switch at the Chemetron panel. Operation of the manual devices will cause CO_2 to discharge following a time delay when the "lockout" valve at the Chemetron panel is in an open position. The key station actuation will immediately operate predischarge alarms in the protected area and will initiate alarm signal transmission as described above. CO_2 discharge into the area sounds the local pneumatic discharge horns and initiates odorizer release.

Repeat CO_2 discharges into any protected area can be accomplished by using the manual key station for that area or the key switch at the Chemetron panel. This may be done without resetting the control panel and may continue for as many cycles as there is available CO_2 storage.

The previously mentioned key-operated manual actuation stations also have an "abort" function that provides authorized personnel the capability to stop an unwanted or inadvertent discharge for personnel or plant safety concerns.

To avoid the concern of "thermal shock," all CO_2 discharge nozzles have been positioned, where possible, to limit the effects of direct impingement of CO_2 on sensitive electrical equipment.

"Lockout" of both automatic and manual discharge into any protected area is accomplished by operating a ball valve located at the Chemetron panel. Only by manually repositioning this valve to the open position can CO_2 discharge. During "lockout," all detection systems continue to function and transmit alarm signals. When an automatic system is in the "locked-out" mode, a trouble signal is actuated at the Chemetron panel, the building alarm panel, and at the main fire protection console and color-graphics computer unit in the Control Room to provide continuous notification that the automatic CO_2 system for the affected area is locked out. For a manual system, a trouble-signal is actuated at the Chemetron panel, the building alarm panel, and at the main fire protection console and color-graphics computer unit when the "lockout" ball valve is not in a fully closed position, alerting the Control Room of the misaligned valve position. An electrical "lockout" has been provided for all hazards which rely on cross-zone smoke detection for one of the CO_2 system discharge input signals.

The electrical "lockout" consists of two key-locked control switches located in each hazard's Chemetron panel. For manual operation total flood CO_2 systems, one of the key-locked control switches will isolate both fire detection system signals while the other will isolate the ball valve "open" discharge input signal. The electrical "lockout" is <u>only</u> used in conjunction with the mechanical "lock-out" device, when required, to:

- 1. Prevent spurious CO₂ predischarge alarms in hazards where personnel are working.
- 2. Prevent the Master Valve from opening due to work generated spurious detection signals assuming the ball valve is initially open.
- 3. Allow testing the CO_2 system and fire detection system(s) without inadvertently actuating CO_2 discharge.
- 4. Provide the capability to restart or reposition ventilation equipment previously secured by a CO_2 release equipment shutdown signal to aid in purging CO_2 from a hazard area to allow entry of personnel following fire extinguishment and/or completion of the CO_2 discharge.

The disarming of automatic CO_2 systems will be regulated by an existing administrative control procedure. Relief venting for each CO_2 protected area has been provided, as needed, in order to prevent over-pressurization of the area in accordance with NFPA 12 guidelines.

Backup power supply to the Chemetron panels is provided through the uninterrupted power supply (UPS) system (125 VDC supply).

Carbon dioxide/oxygen (CO_2/O_2) monitoring equipment is installed in the control room, the instrument rack room, the service building 4 feet 6 inches elevation of the northwest stairwell and the east and west switchgear rooms. The equipment will measure local atmosphere concentrations and will be used primarily following a cable spreading area CO_2 system discharge.

4.1.2.3 Halon Systems

Automatic operating, total flooding Halon 1301 suppression systems are utilized in the control building, elevation 47 feet 6 inches, to protect the computer room underfloor area and the instrument rack room underfloor area, and also in the condensate polishing facility, elevation 50 feet 6 inches, to protect the records storage area, and the MP3 Fire Pump House.

The Halon supply, except for the Fire Pump House, consists of a manifolded, high pressure system with dedicated main and connected reserve cylinder banks. This main/reserve supply arrangement provides "two-shot" discharge capability. Should the first discharge fail, a second discharge is immediately available by operating a cylinder selector switch (one switch for each set of main/reserve cylinders for each hazard). This supply feeds a fixed piping distribution system with applicator nozzles located throughout the protected areas. Figure 4-1 shows the general schematic layout of the Halon system. The Fire Pump House is provided with one cylinder bank.

The systems are designed to provide a minimum 7 percent by room air volume concentration within a 10 second discharge time, except for the Fire Pump House system, which provides a minimum 5 percent by room air volume concentration.

All systems, except for the Fire Pump House, are automatically operated by single-zone, rate compensated type heat detectors located in the protected area. Along with discharging the suppression system, operation of any single detector actuates a local alarm bell outside the area and transmits a signal to the system zone control panel and the building alarm panel, and at the main fire protection panel in the control room. The Fire Pump House system is a cross-zoned system that consists of one smoke detector and one rate of rise heat detector.

Manual operation of the system is achieved by a manual pull station (one main and one reserve) located on the outside wall of the protected area. Actuation of the pull station immediately discharges the system, actuates a horn and light which indicate manual discharge, transmits a system actuation signal to the local, building and control room fire protection panels, trips fans, and closes ventilation dampers in the affected area. All systems can be mechanically actuated at the cylinder bank as a final method.

Manual operation of the Fire Pump House system is achieved by a manual pull station located within the Fire Pump House. There is no reserve tank for this system.

Each system is controlled by a zone panel, which provides power to operate detection circuits, initiate alarm signals and electrically actuate the Halon system. All system components are electrically supervised for circuit continuity and component status (open/closed, on/off, etc.). Visual and audible indication of system status is provided on the face of each panel. All signals

received at the panel are "locked-in" and are only reset by operation of a panel reset switch. All panels are powered by 120 VAC electrical supply with internal 24 VDC battery backup.

4.1.3 PORTABLE SUPPRESSION CAPABILITIES

4.1.3.1 Hose Stream Coverage

Small hose stream coverage (1.5 inch diameter hose) is provided to all fire areas of the plant from connections to fixed 1.5 inch hose stations or by use of 2.5 inch diameter (or larger) hose with gated wye connections available from outside hose houses.

Generally, hose stations are equipped with 100 feet (maximum) of rubber lined, synthetic woven, jacketed fire hose with an adjustable spray shut-off nozzle. In isolated cases an additional 50 foot length of 1.5 inch diameter hose may be used.

The cable spreading area has 1.5 inch continuous flow hose reels equipped with 100 feet of rubber hose, located throughout. These reels will be fed from a fire department connection located in the north outside wall. These reels will enhance the ability to fight cable tray fires.

4.1.3.2 Portable Extinguishers

Selection and placement of portable fire extinguishers are in accordance with the intent of the guidelines of NFPA Standard Number 10, Standard for Portable Fire Extinguishers. All extinguishers utilized are Underwriters Laboratory (UL) listed.

4.1.4 FIRE DETECTION AND ALARM SYSTEMS

The fire detection and alarm systems installed in the plant are designed in general compliance with NFPA Standard Number 72D, Standard for the Installation, Maintenance and Use of Proprietary Protective Signaling Systems.

Fire detection systems are used for early warning detection and may have the capability to actuate fixed fire suppression systems.

Detection devices consist of heat detectors, smoke detectors and flame detectors. In addition, a sampling type incipient fire detection system (IFD) is installed in the cable spreading room.

The heat detectors are rate compensated or line (Main Transformers only) type units. Smoke detectors are of the spot type, employing either the ionization or photoelectric principle. Flame detectors are of the ultra-violet type. Specific application of these detectors in each fire area is detailed in Section 5.

In general, the location of detector units is in accordance with the intent of the guidelines set forth in NFPA Standard Number 72E, Standard on Automatic Fire Detectors.

Fire detectors, water flow indicators, CO_2 and Halon actuation indicators and valve tamper devices are arranged to transmit signals to a local building alarm panel and a fixed suppression system control panel, if applicable. With the exception of devices associated with actuation, signals are then transmitted through the local alarm panels to the main fire protection panel in the control room. Trouble signals for these devices are transmitted in a similar manner.

The alarm system also monitors other miscellaneous fire protection system features such as main CO_2 tank pressure and level, CO_2 system master valve positions, and preaction sprinkler system air pressure.

The main fire alarm system is designed on the multiplex/ethernet connectivity signaling concept. The central control and receiving equipment is located in the control room and consists of a central processing computer unit (CPU), a monitor, a keyboard, and a printer. All fire alarm, detection and trouble signals for the entire plant are monitored by this unit.

The central multiplex/processing units are powered by a reliable electrical supply and has an independent standby battery supply.

4.2 VENTILATION CAPABILITIES FOR SMOKE REMOVAL

4.2.1 PORTABLE SMOKE REMOVAL

Portable smoke removal equipment is strategically located in the plant for use by the fire brigade. The equipment consists of portable educator type fans, accordion style portable ducts, power extension cords and door casing hangers for fans.

4.2.2 FIXED VENTILATION SYSTEMS

Section 9.4 of the FSAR describes fixed ventilation systems provided in each plant building as part of the basic design. These ventilation systems may be used for smoke or CO_2 removal to facilitate fire fighting operation and to supplement fire brigade portable smoke removal efforts.

Fixed ventilation systems may not be available for use in any particular building or fire area because of operating restrictions (airborne radiological contamination) or mechanical restrictions (fire dampers closed in ventilation ductwork or HEPA filters clogged by products of combustion). When these situations occur, plant operating procedures or fire brigade preplan actions govern the activities required to remove or control smoke.

4.3 ACCESS AND EGRESS ROUTES

Emergency access and egress routes are established and indicated accordingly throughout the plant. These routes provide personnel egress and access for fire fighting purposes and for movement through the plant for safe shutdown operations.

Stairwells for these routes have been constructed to provide a two hour fire resistance rating. All doors used in these stairwells are self-closing and have as a minimum Underwriters Laboratory (UL) Class "B" 1.5 hour fire rating.

In some normally unoccupied buildings and enclosures, open stairwells are used. Areas with open or non-rated stairwells are the containment structure, engineered safety features building, main steam valve enclosure, turbine building, auxiliary building central stairwell and fuel building northwest corner stairwell.

Stairwell locations are shown on the Fire Hazards Analysis Drawings (Figures 77A-77D).

4.4 EMERGENCY LIGHTING SYSTEMS

Station lighting assures adequate lighting during all operating conditions, accident conditions, transients, fire, and the loss of offsite power. The systems provide, as a minimum, lighting intensities at levels recommended by the Illuminating Engineering Society Lighting Handbook.

Illumination is provided in accordance with OSHA requirements for all exit facilities and means of egress. Exit signs are illuminated by normal AC and DC systems. Lighting is provided immediately outside any exit.

Redundant lighting systems, both AC and DC, are physically and electrically separated.

The station lighting design is based on previously approved plants with satisfactory operating experience.

Station lighting contains three separate systems.

- 1. Normal AC lighting system is supplied from the normal (i.e., black) 480 VAC motor control centers (FSAR Section 8.3.1) through dry-type 480/208-120 VAC lighting transformers rated both one-and three-phase. This system provides general plant area lighting.
- 2. Essential AC lighting system is supplied from the emergency (i.e., orange or purple) 480 VAC motor control centers (FSAR Section 8.3.1) through 480/208-120 VAC, three-phase, dry-type voltage regulating transformers which are qualified as isolation devices. The output of the isolation transformers, although "black", is run exclusively in conduit and does not share raceways with normal "black" power, emergency power, or with "black" power that originates from an isolation transformer supplied from the opposite emergency bus. The output of the isolation transformer is protected by a circuit breaker. This system provides lighting for the control room, the emergency switchgear rooms (including the auxiliary shutdown panel), and other safety-related and vital areas required to bring the plant to safe shutdown. In addition, access and egress paths for personnel evacuation throughout the station are provided with lighting from this system. The essential AC lighting operates continuously, with the exception of the lighting in

the containment. Upon loss of off site AC power, the essential AC lighting is automatically energized via the emergency AC power source (i.e., emergency generator) as discussed in FSAR Section 8.3.1.1.3.

3. The DC lighting system consists of 8 hour, self-contained, sealed battery packs. Most battery packs are supplied with a trickle charge via the essential AC lighting system (FSAR Section 8.3.1.1.2) which, in the event of a loss of off site power, is supplied automatically from the emergency generator (FSAR Section 8.3.1.1.3). In some areas of the plant, these battery packs are supplied with a trickle charge via the normal ac lighting system (FSAR Section 8.3.1.1.1). The DC lighting system operates upon the loss of the essential or normal AC lighting system (FSAR Sections 9.5.3.2(1) and 9.5.3.2(1)). Upon energization of the essential or normal AC lighting system (FSAR Sections 9.5.3.2(1)) and 9.5.3.2(1)), the DC Emergency lighting extinguishes. The DC lighting system is sufficient to provide emergency lighting to perform essential tasks to bring the plant to cold shutdown. The DC lighting system provides lighting for the control room, emergency switchgear rooms (including the auxiliary shutdown panel), other safety-related and vital areas, and in access and egress paths for personnel evacuation throughout the station.

DC lighting with 8-hour self-contained sealed battery packs are also installed inside the MP3 SBO (AAC) diesel and switchgear enclosures for access/egress and operation of equipment from the control board. The MP3 SBO diesel generator is credited to supply MP2 with alternate AC power in the event of a fire in specifically identified Unit 2 Appendix R fire areas.

In addition, this lighting is supplemented with the Millstone Station Security Lighting for outdoor access/egress routes, and access to the Appendix R equipment cage in Warehouse Building Number 435. The security lighting system is also credited for MP3 operations personnel access/egress yard area routes to the MP3 SBO (AAC) diesel and switchgear enclosures. Access is required to start the diesel and energize the 4160 volt tie to MP2 in the event of a MP2 Appendix R fire in certain areas.

4.5 COMMUNICATION SYSTEMS

Reliable communication systems for intraplant and intrasite communication meet the requirements of operation and maintenance of the unit during fire emergency. Multiple communication systems ensure the capability to notify the necessary personnel of the presence of an unsafe condition so that corrective measures can be taken.

These communication systems provide effective communications between plant personnel in key operating vital areas during the full spectrum of accident or incident conditions (including fire) under maximum equipment operating noise levels. Design of these systems is based on previously reviewed plants with satisfactory operating experience.

Intraplant communications important to fire brigade/control room operator interface during fire emergency consist of the voice paging system, maintenance jack system, sound-powered phone, and multi-frequency UHF handheld radios, UHF radio pagers, and associated repeaters. The one communication system that remains effective for any Unit 3 fire scenario is the radio system. Channels 1, 2 and 3 are utilized by the Site Fire Brigade.

4.5.1 VOICE PAGING SYSTEM

The intraplant voice paging system provides communications from the control room to all buildings and control areas within the unit, and through interface with the Southern New England Telephone Company (SNETCO) switching network, from any one control area to any other. The intraplant voice paging system is an independent system using separate amplifiers and speakers at each paging station. Public address units are provided in all buildings which comprise the unit and in the outside areas surrounding the unit. Access to voice paging speakers is provided and initiated by dialing a code number from any dial telephone. The control room has priority access to the public address system. This access bypasses the switched network.

4.5.2 MAINTENANCE JACK SYSTEM

The maintenance jack system, used for calibration and maintenance, consists of amplifiers, headsets, handsets, and a network of plug-in jack type receptacles with five-party selector switches located throughout the unit.

4.5.3 SOUND-POWERED PHONE

The sound-powered phone system provides voice communication among the main control room and the auxiliary shutdown panel and vital operating areas throughout the plant for purposes of fire fighting, and shutting the plant down.

4.5.4 UHF SYSTEM

The trunked 800 MHz radio system supports plant operations and fire fighting activities. The system uses a base station located in the CPF (Building 212). The trunking repeaters and one antenna system along with the trunking central controllers are installed in Building 127. The UHF output of the base station is 35 watts and the UHF output of the repeating station is 75 watts. The individual portable radios are also equipped with a small antenna (5 watts output) which provides an additional "talk-around" feature between portable radios. The radio console is able to access through the use of the control base station antenna similar but separate UHF radio repeater systems of the other units at Millstone, as well as site security, for emergency operations.

The cables in the communication systems are independent from those of other systems and are shielded or isolated from power cables and any other sources of line noise which could adversely affect the audibility of the systems. The communication systems use twisted, balanced audio pairs to further reduce the effect of longitudinally induced noise.

A five channel backup system is installed in Building 475. This system is designed to come on-line in the event of a failure at the prime site.

4.5.5 HARDWIRE INTERCOM SYSTEM

Between the three control rooms there is a hardwire intercom system providing communication capability between any of the three control rooms.

	Manual Dry Pipe	Automatic Preaction	Automatic	Manual
Automatic Wet Pipe Sprinkler	Sprinkler	System	Waterspray	Waterspray
Auxiliary Boiler Enclosure	Emergency Generator	Turbine Building—	Station Transformers	Auxiliary Building
	Enclosures (Elevation	Generator Bearing	(7)	Filters (Elevation
	24 feet 6 inches)	Enclosures (Elevation		66 feet 6 inches and
		64 feet 6 inches)		79 feet 8 inches)
			Turbine Building	
			1. Lube Oil Reservoir	
			and Conditioner	
			(Elevation 38 feet	
			6 inches)	
Auxiliary Building (Water Curtain			2. Hydrogen Seal Oil	Technical Support
System) (Elevation 24 feet 6 inches)			Unit (Elevation	Center-Filter
			14 feet 6 inches)	(Elevation 28 feet
				6 inches)
Containment Electrical Penetration			3. Main Feedwater	
Area System (Elevation 24 feet			Pumps and Lube	
6 inches and 45 feet 6 inches)			Oil Piping	
			(Elevation 64 feet	
			6 inches)	
Control Building General Support Area				
(Elevation 64 feet 6 inches)				
Condensate Polishing Facility				
(Elevation 28 feet 6 inches and 50 feet				
6 inches)				
Waste Disposal Building Solid Waste				
Area				
Turbine Building (including the				
Condensate Polishing Enclosure)				
General Areas Below Operating Floor				

TABLE 4-1 SPRINKLER/WATERSPRAY PROTECTED AREAS

4-14

MPS-3 FPER

4-15

TABLE 4-2 CO₂ PROTECTED AREAS

Automatic Operation / Total Flood	Manual Operation / Total Flood	Automatic Operation / Local Application	Manual Operation / Local Application/Total Flood
Fuel Oil Vaults - Adjacent to EGEs (below grade)	Control Building - East and West Switchgear Areas (Elevation 4 feet 6 inches)	Auxiliary Boiler Enclosure Fuel Oil Pump Pit (Elevation 25 feet 0 inches)	Turbine Building - Alternator / Exciter Bearings and Casing Enclosure (Elevation 64 feet 6 inches)
	Service Building - North and South Cable Tunnels (Elevation 4 feet 6 inches)		
	Service Building - Normal Switchgear Area (Elevation 4 feet 6 inches)		
	Auxiliary Building - East and West MCC/Rod Control Areas (Elevations 4 feet 6 inches, 24 feet 6 inches and 45 feet 6 inches)		
	Control Building - Cable Spreading Room (Elevation 24 feet 6 inches)		

FPER FIGURE: 4-1 (SHEETS 1-6) P&ID FIRE PROTECTION

The figure indicated above represents an engineering controlled drawing that is Incorporated by Reference in the MPS-3 FSAR. Refer to the List of Effective Figures for the related drawing number and the controlled plant drawing for the latest revision.

SECTION 5—FIRE HAZARD ANALYSIS (FHA)

5.1 EVALUATION CRITERIA

An evaluation of fire protection for Millstone 3 ascertains that it does provide reasonable assurance that a fire will not cause an unacceptable risk to public health and safety, does not prevent the performance of necessary safe shutdown functions, and does not significantly increase the risk of radioactive release to the environment. Branch Technical Position (BTP) CMEB 9.5-1 provides specific guidelines used to review the fire protection program for an operating plant and, whenever applicable, these guidelines have been addressed. However, though specific BTP CMEB 9.5-1 guidelines indicate particular provisions for fire protection, the adequacy of the fire protection program is based on the effects of potential fire hazards throughout the plant. To provide broader guidelines for the evaluation, additional criteria were selected to serve as the basis for the overall evaluation. These criteria are described below.

- 1. General Design Criterion 3 (10 CFR 50, Appendix A) Fire Protection: "Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Noncombustible and heat resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room. Fire detection and fighting systems of appropriate capacity and capability shall be provided and designed to minimize the adverse effects of fires on structures, systems, and components important to safety. Fire fighting systems shall be designed to assure that their rupture or inadvertent operation does not significantly impair the safety capability of these structures, systems, and components."
- 2. Defense-in-Depth Criterion: For each fire hazard, a suitable combination of fire prevention, fire detection and suppression capability, and ability to withstand safely the effects of a fire is provided. Both equipment and procedural aspects of each are considered.
- 3. Single-Failure Criterion: No single active failure shall result in complete loss of protection of both the primary and backup fire suppression capability.
- 4. Fire Suppression System Capacity and Capability: Fire suppression capability is provided, with capacity adequate to extinguish any fire that can credibly occur and have adverse effects on equipment and components important to safety.
- 5. Backup Fire Suppression Capability: Total reliance for fire protection is not placed on a single automatic fire suppression system. Appropriate backup fire suppression capability is provided.
- 6. Acceptability of Manual Fire Suppression: If it can be shown that safe-shutdown capability is independent of any credible fire, manual fire fighting capability is sufficient to protect safety related systems.
7. Noncombustible aluminum and steel cable trays and conduit are used throughout. The design includes separation of trains, channels, and nonsafety cables into different cable trays. There is complete separation, with either barrier or space, between trains and channels of redundant circuits, which agrees with Regulatory Guide 1.75, Rev. 1, dated January 1975. Electrical separation requirements between 1E cables and non-1E cables (either in a cable tray or free air) have been reduced from the distances specified in Regulatory Guide 1.75, Rev. 1, by means of a testing program. Fire barriers that include cable tray covers and cable wraps have been installed as required by Regulatory Guide 1.75 or where testing results demonstrated their adequacy for reduced separation requirements between 1E and non-1E cables. Any cable trays that are directly placed under a grating will have a cover on it. Suitable fire shields have been provided at common mode hazards to both safety systems. Some cable trays within the containment have noncombustible covers.

Fire stops are provided where cables pass through fire rated floors and walls.

Samples of all safety-related power cable (including 8-kV, 5-kV, and 1-kV cables), 1,000 volt control cable, 600 volt instrument cable, and triaxial cable have been tested and, as a minimum, meet IEEE Standard 383, Type Test of Class IE Electric Cables, Field Splices, and Connections to Nuclear Power Generating Stations. Non safety-related cable jackets are of flame retardant material, and fillers are flame retardant and non-wicking.

To the extent possible, cable construction that does not give off corrosive gases while burning is used; however, the fire retardant characteristics of the cables are accomplished by the addition of halogens.

5.2 FIRE HAZARD ANALYSIS METHOD

Fire protection was evaluated by conducting a fire hazard analysis. If a deficiency with respect to the requirements of BTP CMEB 9.5-1 was identified, its disposition was based on the fire hazard analysis and the criteria for the overall evaluation.

A more detailed description of the analysis method is given in the following summary:

- 1. Plant design features related to fire safety were determined. These include the overall plant layout, type, and location of combustible materials, type of construction and its fire resistant characteristics, fire detection and fire suppression systems, separation distance, etc.
- 2. Areas containing equipment and components important to safety were identified. These areas and adjacent areas with fire hazard potential were subdivided into fire areas and zones within areas on the basis of existing boundary fire barriers and other logical physical divisions or equipment groupings. For each fire area/zone, the following were determined:

a. Total heat potential (Btu/ft²) in the area/zone, assuming total combustion of cable insulation, oil, charcoal, and other identifiable combustibles including transients.

Total heat potential is calculated by summing the heat potential contribution for each type of combustible within a fire area/zone. Heat potential is calculated by multiplying the quantity of a particular combustible by that combustible's heat of combustion and dividing by the fire area/zone floor area. A combustible that has its heat potential calculated by this method is considered an ordinary combustible.

b. Fire severity is determined by the material burned and its rate of burning. To evaluate the fire resistance needed for any fire barrier, a fire severity (duration) is developed for each area. Severity is measured in terms of temperature and fire duration. Once the total heat potential (Btu/ft²) of an area or zone has been computed and has been corrected to be equivalent to wood, an equivalent fire severity may be determined.

To determine an equivalent fire severity, Table 6-6A, Estimated Fire Severity for Offices and Light Commercial Occupancies, National Fire Protection Association, Fire Protection Handbook, Seventeenth Edition, has been adopted for this analysis.

- c. Safety related equipment and safe shutdown equipment and systems in the area.
- d. Fire detection and suppression systems.
- e. Fire barrier boundaries.
- 3. For each area/zone, the adequacy of existing fire detection and fire suppression systems was evaluated considering the combustibility of materials, potential ignition sources, and the concentration of combustible materials.
- 4. Plant features were evaluated that impact directly or indirectly on the plant fire brigade's ability to reach and effectively fight credible fires.
- 5. Drainage for water from fire suppression was assessed for adequacy and operability of safety related and safe-shutdown related equipment.

The specific analysis results for each fire area or zone are given in Section 5.5.

The ANSI/ASTM E 119, Standard Methods of Fire Tests of Building Construction and Materials and NFPA 251 Standard Time-Temperature Curves are representative of the severity of a fire completely burning out a brick, wood-joisted building and its contents.

They are the basis used in the fire hazard analysis to evaluate fire severity.

5.3 FIRE HAZARD ANALYSIS ASSUMPTIONS

The fire hazard analysis was based on the following assumptions:

- 1. Fire areas were established as defined in Section 5.4.
- 2. Fire zones were established as defined in Section 5.4.
- 3. Floor area calculations assume that the entire floor area within the boundaries, as defined by exterior walls or other accepted divisions, is available for fire loading. Obstructions within a given fire area, such as equipment or rooms that do not extend to the above floor elevation, are available for fire loading and, therefore, the surface area of these obstructions is included in the floor area calculation. The areas occupied by interior walls and columns (except in remote occurrences) are considered negligible. Stairwells and elevators are excluded from the floor area calculation.
- 4. Complete combustion of all the in-situ and transient combustible contents of a fire area was postulated.
- 5. All cable trays are assumed filled to the maximum allowable depth.
- 6. Transient combustibles are identified as those combustibles not normally considered in-situ but assumed to be within an area for maintenance purposes. Normally, the quantity of transient combustibles is based on complete change out of lubricating/ hydraulic oil, charcoal, and resins. For areas containing replaceable resins and/or charcoal, one 55 gallon container of each, as applicable, is assumed to be in the area. For areas containing replaceable oils, quantity is determined by the amount of in situ oil and the logical container(s) in which the oil would be transported. Transient oils fire loading contribution are calculated as ordinary combustibles instead of by the rate of burning method (Sections 5.2 and 5.5).
- 7. Elimination of the fire hazard (or sufficient limitation of sphere of influence) is an acceptable method of providing fire protection.
- 8. The adequacy of fire doors and dampers or other protected penetrations of fire area boundaries is based on the design and rating of the door or damper compared to the rating of the penetrated boundary. A 3 hour rating has been used as a general guideline for the rating of barriers. Enclosures, especially shielding walls, without openings could have significantly higher ratings. Protection of openings is qualified to the required fire rating of 3 hours or less.
- 9. Resins that are stored in steel tanks are not considered combustible.

- 10. Cables that are routed in conduit and junction boxes do not function as intervening combustibles and do not contribute to the fire loading of the area.
- 11. 11.BTP CMEB 9.5-1 requires that interior finishes should be noncombustible or listed by a nationally recognized testing laboratory, such as Factory Mutual or Underwriters' Laboratories, Inc., for flame spread, smoke, and fuel contribution of 25 or less in its use configuration (ASTM E-84 Test, Surface Burning Characteristics of Building Materials). Finishes in this context are not directed at paint or coating systems for walls and equipment since these items do not normally constitute an appreciable fire loading. Paint is considered in the fire hazard analysis as part of the negligible fire loading.
- 12. All motors are metal except for winding insulation and bearing lubricant. The winding insulation consists of mica and resins. The mica is nonflammable. The resins may burn if ignited, but they require high temperatures. The total amount of resin in a motor is about 2 percent by weight. The amount of bearing lubricant in a motor is small. On these bases, they are considered in the fire hazard analysis as part of the negligible fire loading.
- 13. All insulation and replaceable filter media are listed by the Underwriters' Laboratories and has a flame spread rating of not more than 25. Flame spread rating is in accordance with ASTM E-84. For this reason insulation and filter media are considered in the fire hazard analysis as part of the negligible fire loading.
- Office areas are assumed to have a fire loading of 6 psf (heat potential of 48,000 Btu/ft²).
- 15. The condensate polishing facility records storage area is assumed to have a fire loading of 17.9 psf (heat potential of 143,200 Btu/ft²).

5.4 FIRE AREAS AND ZONES

The plant arrangement is divided into fire areas and fire zones for purposes of conducting the fire hazard analysis and the safe shutdown evaluation. Fire areas are defined as plant areas bounded by fire-rated assemblies of either 3 hour rated construction or lesser fire resistance as specifically identified and justified in the fire hazards analysis. Fire zones are zones within fire areas that are used to more thoroughly describe the fire area. Fire zones may or may not be bounded by fire rated construction. The safe shutdown evaluation relies only on fire areas to determine the effects of fire on safe shutdown.

Figures 77A through 77F show this division and serve as reference for the fire hazard analyses contained in Section 5.5.

5.5 FIRE HAZARD ANALYSES

This section presents the fire hazard analysis for each fire area.

Under the heading, Combustible Loading, the following explanations are presented:

1. Oil fire calculations are based on depth of spill and burning rate of 6 inches per hour if the oil can be logically contained and can achieve an appreciable depth; otherwise, the oil is treated as an ordinary combustible.

Oils from pumps, motors, reducers, compressors, hydraulically operated valves, and motor operated dampers are examples that would be calculated as an ordinary combustible.

Oils from tanks, large reservoirs, and oil filled transformers would normally be calculated by the rate of burning method.

2. The fire load calculation documents the fire load and duration determined for each area and zone. Calculated Fire Loading (Btu/ft²) and Fire Duration (hours and minutes) values are relative terms and represent approximations of fires involving the actual combustibles present at the various locations compared to the standard fire described in Section 5.2. To reflect the comparative nature of these values, the specific quantities of combustibles and the exact time of "Fire Duration" is represented by the relative "Severity Classification" and limiting values for "Fire Loading," as follows:

Severity Classification	Fire Loading Value (Btu/ft ²)
Insignificant	< 6,500
Low	< 80,000
Moderate	< 160,000
Moderately Severe	< 240,000
Severe	240,000 or above

AUXILIARY BOILER ENCLOSURE

ANALYSIS 1 – Floor Area and Fuel Oil Pump Pit, Fire Area ABR-1, Zones A and B, Elevation 25 feet and 40 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary boiler enclosure is located south of the turbine building, east of the condensate polishing building, and north of the MP-2 condensate polishing facility. There is no safe shutdown equipment in this area.

Fire Area ABR-1 is divided into two communicating fire zones: Zone A - Boiler building floor area and equipment mezzanine Zone B - Fuel oil pump pit (northeast corner of Elevation 25 feet of Zone A)

MAJOR EQUIPMENT:

Non Safety Related

Zone A

Auxiliary Boiler Auxiliary Boiler Deaerator Auxiliary Boiler Condensate Receiver Auxiliary Boiler Condensate Pump Auxiliary Boiler Condensate Makeup Pump Auxiliary Boiler Feedwater Pump Auxiliary Boiler Blowdown Tank Auxiliary Boiler Blowdown Vent Condenser Steam to Water Heat Exchanger Winter Water Circulating Pump Summer Water Circulating Pump Hot Water Expansion Tank Hot Water Heating Makeup Pump Hot Water Heating Chemical Feed Tank Air Separator Auxiliary Boiler Fuel Oil Electric Heaters Auxiliary Boiler Chemical Feed Tank Cables

Zone B:

Auxiliary Boiler Fuel Oil Pumps Cables

AUXILIARY BOILER ENCLOSURE (CONT'D)

FIRE PROTECTION

Zone A - General Floor Area

Suppression -	Wet pipe automatic sprinkler protection at ceiling level.
	Control room receives water flow alarm and valve tamper signal/local alarm sounds at Zone Panel Number 6F located in the turbine building - west wall (Elevation 14 feet 6 inches) 1.5 inch hose stations provided in area
	2.5 inch hose connections at 1.5 inch hose stations.
	Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection -	Single zone rate compensated heat detector for actuation of local CO ₂ system. Control room receives smoke alarms/local alarms sound at Zone Panel Number 6F located in the turbine building - west wall (Elevation 14 feet 6 inches)
Zone B - Fuel Oil Pump Pit	
Suppression -	Wet pipe automatic sprinkler protection at ceiling level provides partial coverage of pit.
	Automatic operating CO_2 system (local application).
	System actuation alarm transmits to control room/local horn in Zone A upon discharge.
	All other portable/manual extinguishing equipment same as Zone A.
	Control room receives detection alarm/local alarm sounds at Zone Panel Number 6F located in the turbine building - west wall (Elevation 14 feet 6 inches) and outside of Zone A near the east access door.
Detection -	Single zone rate compensated heat detector for actuation of local CO_2 system.

DESIGN FEATURES

 Construction - Refer to Figures 77B and 77C for a physical description of this area. Three hour fire rated construction provided between adjacent fire areas.
Drainage - Floor drains in Zones A and B to oil separation system; 4 inch

Drainage - Floor drains in Zones A and B to oil separation system; 4 inch concrete dike around oil pump pit.

AUXILIARY BOILER ENCLOSURE (CONT'D)

COMBUSTIBLE LOADING

Floor Area - Zone A - 3,478 ft² Zone B - 66 ft² <u>Combustible Material</u> Cable Insulation 480 V MCC Control Panels Fuel Oil* Pump Lube Oil Transient Lube Oil * Zone B combustible

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Severe *

* The Severity Classification is due to the fuel oil pump pit which has an 8 hour fire

240,000 or above

* The Severity Classification is due to the fuel oil pump pit which has an 8 hour fire duration.

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault, or the ignition of spilled oil from the auxiliary boilers or the fuel oil pump pit.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

ANALYSIS 2 - North Floor Area, Fire Area AB-1, Zone A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building and west of the fuel and waste disposal buildings.

Fire Area AB-1, Zone A, involves the north portion of the elevation 4 feet 6 inches floor area and pipe tunnel pit. Fire Zone AB-1A communicates laterally with Fire Area AB-1, Zone B, and vertically with Fire Area AB-1, Zones C, D, E, and F. There is safe shutdown equipment in this zone.

MAJOR EQUIPMENT

Safe Shutdown

RWST Valves

Cables

Charging Pump Cooler A

Safety Related

Cables

Non safety Related

Primary Drains Transfer Tank and Pumps

Auxiliary Condensate Receiver and Pumps

Boron Evaporator Bottoms Pumps and Cooler

Boron Bottoms Coolant Preheater and Pumps

Boron Evaporator

Degasifier Feed Preheater

Boron Evaporator Reboiler and Reboiler Pump

Degasifier, Degasifier Trim Cooler, Recirculating Pumps and Recovery Exchangers

Reactor Plant Component Cooling Chemical Addition Tank

Instrument Transmitter Racks

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose stations with 2.5 inch hose connections located throughout this area.

I

Portable fire extinguishers are provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection in all areas with appreciable combustible loading.

Control room receives detection alarms/local alarms sound at Zone Panel Number 2E located in the service building - west corridor (Elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figures 77A and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains located throughout all floor areas.

COMBUSTIBLE LOADING

Floor Area - $9,971 \text{ ft}^2$

Combustible Material

Control Panels Pump/Compressor Lube Oil Transient Lube Oil Rubber

SEVERITY CLASSIFICATION Low

FIRE LOADING VALUE (BTU/FT²)

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This fire zone does not comply with the specific requirements of Section C.5.b of BTP CMEB 9.5-1. An alternative means of compliance is provided in a deviation request

submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

DEVIATION

BTP CMEB 9.5-1 Section C.5.b.(2) - Separation of Cables and Equipment

A deviation request has been submitted and transmitted to the NRC (J.F. Opeka to B. J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

At the request of the NRC, a revised deviation request has been submitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11814, dated October 21, 1985 - Docket Number 50-423).

Additional information was requested in a telecon dated October 30, 1985, between D. Kubicki (NRC) and R. Joshi (NUSCO) and submitted to the NRC via a revised deviation request on November 4, 1985. (J. F. Opeka letter to B. J. Youngblood, Letter B11852, dated November 4, 1985).

ANALYSIS 3 - South Floor Area, Fire Area AB-1 Zone B, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-1B involves the south portion of elevation 4 feet 6 inches. floor area and communicates laterally with Fire Area AB-1, Zone A, and vertically with Fire Area AB-1, Zones C, D, E, and F. There is safe shutdown equipment in this zone.

MAJOR EQUIPMENT

Safe Shutdown

Valves

Air Compressors

Cables

Safety Related

Microprocessor

Nuclear Instrumentation Junction Boxes

Cables

Non safety Related

Instrument Transmitting Racks

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose stations with 2.5 inch hose connections located throughout this area.

Portable fire extinguishers are provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection in all areas where appreciable combustible loading is present.

Control room receives detection alarms/local alarms sound at Zone Panel Number 2E located in the service building west corridor (Elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figure 77A for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains located throughout all floor areas.

COMBUSTIBLE LOADING

Floor Area - 4,024 ft²

Combustible Material

Compressor Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION Insignificant <u>FIRE LOADING VALUE</u> (BTU/FT²) < 6,500

POSTULATED FIRE

The postulated fire is an oil fire resulting from a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

This fire zone does not comply with the specific requirements of Section C.5.b of BTP CMEB 9.5-1. An alternative means of compliance is provided in a deviation request submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

DEVIATION

BTP CMEB 9.5-1 Section C.5.b.(2) - Separation of Cables and Equipment

A deviation request has been submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

At the request of the NRC, a revised deviation request has been submitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11814, dated October 21, 1985 - Docket Number 50-423).

Additional information was requested in a telecon dated October 30, 1985, between D. Kubicki (NRC) and R. Joshi (NUSCO) and was submitted to the NRC via a revised deviation request on November 4, 1985. (J. F. Opeka letter to B. J. Youngblood, Letter B11852, dated November 4, 1985.)

ANALYSIS 4 – East Floor Area, Fire Area AB-1, Zone C, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building and west of the fuel and waste disposal buildings.

Fire Area AB-1, Zone C, involves the east portion of the elevation 24 feet 6 inches floor area and communicates laterally with Fire Area AB-1, Zone D, and vertically with Fire Area AB-1, Zones A, B, E, and F. Areas AB-1C and AB-1D are located north of Fire Areas AB-5 and AB-6A (MCC/ROD control areas). There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Seal Water Injection Filters Reactor Coolant Filters Letdown Filter Seal Water Heat Exchanger Letdown Heat Exchanger Cables

Safety Related

Boric Acid Filter Mixed Bed Demineralizers Seal Water Return Filter Cation Bed Demineralizers Thermal Regeneration Demineralizers Letdown Reheat Heat Exchanger Letdown Chiller Heat Exchanger Moderating Heat Exchanger Cables

Non Safety Related

Boron Evaporator Bottoms Filters Cesium Removal Ion Exchangers Fuel Pool Demineralizers and Post Filter Boron Recovery Filter Radioactive Liquid Waste Effluent Filters Cables

FIRE PROTECTION

Suppression - No fixed suppression for general area Fixed water curtain provided at south stairwell from filter and heat exchanger cubicle area.

1.5 inch hose stations with 2.5 inch hose connections located throughout this area. Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection in all areas with appreciable combustible loading.

Control room receives detection alarms/local alarms sound at Zone Panel Number 2E located in the service building - west corridor (elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figures 77B and 77F for a physical description of this area.

Drainage - Floor drains throughout all floor areas.

COMBUSTIBLE LOADING

Floor Area - 3,040 square feet

Combustible Material

Cable Insulation Lube Oil Transient Lube Oil Clothing (cotton) Plastic Rubber Fiberglass box

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This fire zone does not comply with the specific requirements of Section C.5.b of BTP CMEB 9.5-1. An alternative means of compliance is provided in a deviation request submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

DEVIATION

BTP CMEB 9.5-1 Section C.5.b.(2) - Separation of Cables and Equipment

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

At the request of the NRC, a revised deviation request has been submitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11814, dated October 21, 1985 - Docket Number 50-423).

Additional information was requested in a telecon dated October 30, 1985, between D. Kubicki (NRC) and R. Joshi (NUSCO) and was submitted to the NRC via a revised deviation request on November 4, 1985. (J. F. Opeka letter to B. J. Youngblood, Letter B11852, dated November 4, 1985.)

ANALYSIS 5 – West Floor Area, Fire Area AB-1, Zone D, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building and west of the fuel and waste disposal buildings.

Fire Area AB-1, Zone D, involves the west portion of elevation 24 feet 6 inches floor area and communicates laterally with Fire Area AB-1, Zone C, and vertically with Fire Area AB-1, Zones A, B, E, and F. Areas AB-1C and AB-1D are located north of Fire Areas AB-5 and AB-6A (MCC/ROD control areas). There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Reactor Plant Component Cooling Pumps Reactor Plant Component Cooling Heat Exchangers Charging Pumps Charging Pump Cooling Pumps Charging Pump Cooler B Transfer Switch Cables

Safety Related

Cables

Non Safety Related

Degasifier Recovery Exchanger Degasifier Degasifier, Condenser, Feed Preheater and Trim Cooler Boron Evaporator Boron Distillate Pump and Cooler Motor Control Centers Cables I

FIRE PROTECTION

Suppression - No fixed suppression for general area.

Closed head, wet pipe sprinkler system for water curtain protection located between charging pump cubicles and RPCCW pumps. This system also protects cable trays serving these pumps via closed heads above trays and heads below bottom tray for protection against transient combustibles. Fire stops are provided for cable trays adjacent to water curtain.

Fixed water curtain provided for charging pump cubicle pipe openings, charging pump cubicle ventilation supply ducts, the Boron Evaporator & Reboiler Cubicle and open stairwells from elevation 4 feet 6 inches.

Control room receives water flow alarm for water curtain system/local alarm sounds at Zone Panel Number 2E located in the service building - west corridor (elevation 4 feet 6 inches).

1.5 inch hose stations with 2.5 inch hose connections located throughout this area.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection in all areas with appreciable combustible loading.

Control room receives detection alarms/local alarms sound at Zone Panel Number 2E located in the service building - west corridor (elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figures 77B and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains located throughout all floor areas.

COMBUSTIBLE LOADING

Floor Area - $6,408 \text{ ft}^2$

Combustible Material

Cable Insulation 480 V MCC Pump Lube Oil Transient Lube Oil Plastic

SEVERITY CLASSIFICATION

Low

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 80.000

POSTULATED FIRE

The postulated fire is a lubricating oil or cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This fire zone does not comply with the specific requirements of Section C.5.b of BTP CMEB 9.5-1. An alternative means of compliance is provided in a deviation request submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

DEVIATION

BTP CMEB 9.5-1 Section C.5.b.(2) - Separation of Cables and Equipment

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

At the request of the NRC, a revised deviation request has been submitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11814, dated October 21, 1985 - Docket Number 50-423).

Additional information was requested in a telecon dated October 30, 1985, between D. Kubicki (NRC) and R. Joshi (NUSCO) and was submitted to the NRC via a revised deviation request on November 4, 1985. (J. F. Opeka letter to B. J. Youngblood, Letter B11852, dated November 4, 1985.)

ANALYSIS 6 - Floor Area, Fire Area AB-1, Zone E, Elevation 43 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-1, Zone E, involves the entire open floor area of the elevation 43 feet 6 inches north of Fire Areas AB-5 and AB-6A (MCC/rod control areas). Fire Area AB-1, Zone E, communicates vertically with Fire Area AB-1, Zones F, A, B, C, and D. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Boric Acid Tanks Charging Pump Cooling Surge Tank MCC/Rod Control Area Booster Pumps Cables

Safety Related

Boric Acid Transfer Pumps Volume Control Tank Cables

Non Safety Related

Containment Vacuum Pumps Thermal Regeneration Chiller Chiller Starter Cabinet Sample Panel PC Package Chiller Chemical Mixing Tank Boron Recovery Panel Boron Distillate Tank Boron Evaporator Condenser Process Gas Refrigeration Skid Motor Control Centers Process Gas Charcoal Bed Adsorber Cables

FIRE PROTECTION

Suppression - No fixed suppression for general area.

1.5 inch hose stations with 2.5 inch hose connections located throughout this area. Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection in all areas with appreciable combustible loading.

Control room receives detection alarms/local alarms sound at Zone Panel Number 2E located in the service building - west corridor elevation 4 feet 6 inches.

DESIGN FEATURES

Construction - Refer to Figures 77C and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains located throughout all floor areas.

COMBUSTIBLE LOADING

Floor Area - $10,031 \text{ ft}^2$

Combustible Material

Lube Oil Cable Insulation 480 V MCC Control Panels Transient Lube Oil Transient Charcoal Clothing (cotton) Plastic Rubber

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

< 80,000

Low

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This fire zone does not comply with the specific requirements of Section C.5.b of BTP CMEB 9.5-1. An alternative means of compliance is provided in a deviation request submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

DEVIATION

BTP CMEB 9.5-1 Section C.5.b.(2) - Separation of Cables and Equipment

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

At the request of the NRC, a revised deviation request has been submitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11814, dated October 21, 1985 - Docket Number 50-423).

Additional information was requested in a telecon dated October 30, 1985, between D. Kubicki (NRC) and R.Joshi (NUSCO) and was submitted to the NRC via a revised deviation request on November 4, 1985. (J. F. Opeka letter to B. J. Youngblood, Letter B11852, dated November 4, 1985.)

ANALYSIS 7 - Floor Area, Fire Area AB-1, Zone F, Elevation 66 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-1, Zone F, involves the general open floor area of the elevation 66 feet 6 inches, and communicates vertically with Fire Area AB-1, Zones E, A, B, C, and D. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Reactor Plant Component Cooling Surge Tank Charging Pump and Component Cooling Pump Exhaust Fans Charging Pump and Component Cooling Pump Supply Fans Cables

Safety Related

Auxiliary Building Filter System and Exhaust Fan Fuel Building Filter System and Exhaust Fan Cables

Non Safety Related

Waste Disposal Exhaust Fans Auxiliary Building Exhaust Ventilation Fans Auxiliary Building Sample Room Exhaust Fan Containment Purge Air Supply Ventilation Unit Containment Purge Exhaust Fans Chiller Surge Tank Boric Acid Batching Tank Electrical Tunnel Exhaust Fan Fuel Building Exhaust Fan Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose stations with 2.5 inch hose connections located throughout this area. Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection in all areas with appreciable combustible loading.

Control room receives detection alarms/local alarms sound at Zone Panel Number 2E located in the service building - west corridor (elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figures 77D and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas with the exception of the Supplemental Leak Collection Rate System (SLCRS) ductwork, which is enclosed in a one hour fire rated duct wrap.

The SLCRS ductwork penetrates the west fire wall extending from the "A" SLCRS filter cubicle to the Enclosure Building.

Refer to Appendix B, Section C.5.a.(4) for further information.

Drainage - Floor drains throughout all floor areas.

COMBUSTIBLE LOADING

Floor Area - 11,334 ft²

Combustible Material

Cable Insulation Control Panel Lube Oil Transient Lube Oil Clothing (cotton) Plastic Rubber

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Insignificant

< 6,500

POSTULATED FIRE

The postulated fire is a minor cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This fire zone does not comply with the specific requirements of Section C.5.b of BTP CMEB 9.5-1. An alternative means of compliance is provided in a deviation request submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

DEVIATION

BTP CMEB 9.5-1 Section C.5.b.(2) - Separation of Cables and Equipment

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

At the request of the NRC, a revised deviation request has been submitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11814, dated October 21, 1985 - Docket Number 50-423).

Additional information was requested in a telecon dated October 30, 1985, between D. Kubicki (NRC) and R. Joshi (NUSCO) and was submitted to the NRC via a revised deviation request on November 4, 1985. (J. F. Opeka letter to B. J. Youngblood, Letter B11852, dated November 4, 1985.)

ANALYSIS 8 – Fuel Building Filter Bank, Fire Area AB-2, Zone N/A, Elevation 66 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-2 is located within, but physically separated from auxiliary building Fire Area 1-F, the general floor area of elevation 66 feet 6 inches, and below Fire Area AB-3. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety Related

Fuel Building Filter Assembly Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression system for the fire area cubicle.

Manually operated, timed cycle, deluge water spray system within the filter unit for protection of charcoal filtration material.

Water flow alarms and valve tamper supervision provided with signals to control room and local Zone Panel Number 2E located in the service building (elevation 4 feet 6 inches).

1.5 inch hose stations and 2.5 inch hose connections available in Fire Area AB-1F.

Detection - Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Single smoke detector at ceiling of fire area cubicle.

Heat detection system within the filtration unit. Control room receives detection alarms/local alarms sound at Zone Panel Number 2E located in the service building west corridor (elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figure 77D for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - No drains for cubicle. Manual internal water spray system drains for filter

COMBUSTIBLE LOADING

Floor Area - 711 ft²

Combustible Material

Charcoal Filter Transient Charcoal

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderately Severe

< 240,000

POSTULATED FIRE

The postulated fire is a charcoal fire resulting from a transient ignition source or adsorbent radioactive decay heat.

CONSEQUENCES OF A POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains in the Filter Cubicles

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ANALYSIS 9 – Fuel Building Filter Bank, Fire Area AB-3, Zone N/A, Elevation 79 feet 8 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-3 is located adjacent to auxiliary building Fire Area 1-F, the general floor area of elevation 66 feet 6 inches, and above Fire Area AB-2. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety Related

Fuel Building Filter Assembly Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression system for the fire area cubicle.

Manually operated, timed cycle, deluge water spray system within the filter unit for protection of charcoal filtration material.

Water flow alarms and valve tamper supervision provided with signals to control room and local Zone Panel Number 2E located in the service building (elevation 4 feet 6 inches).

1.5 inch hose stations and 2.5 inch hose connections available in Fire Area AB-1F. Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single smoke detector at ceiling of fire area cubicle.

Heat detection system within the filtration unit.

DESIGN FEATURES

Construction - Refer to Figure 77D for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - No drains for cubicle. Manual internal water spray system drains for filter.

COMBUSTIBLE LOADING

Floor Area - 711 ft²

Combustible Material

Charcoal Filter Transient Charcoal

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderately Severe

< 240,000

POSTULATED FIRE

The postulated fire is a charcoal fire resulting from a transient ignition source or adsorbent radioactive decay heat.

CONSEQUENCES OF A POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CEMB 9.5-1 Section C.5.a.(14) - Floor Drains in the Filter Cubicles

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ANALYSIS 10 – Auxiliary Building Filter Bank, Fire Area AB-9, Zone N/A, Elevation 66 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-9 is located within but physically separated from auxiliary building Fire Area 1-F, the general floor area of elevation 66 feet 6 inches, and below Fire Area AB-10. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety Related

Auxiliary Building Filter Assembly Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression system for the fire area cubicle.

Manually operated, timed cycle, deluge water spray system within the filter unit for protection of charcoal filtration material.

Water flow alarms and valve tamper supervision provided with signals to control room and local Zone Panel Number 2E located in the service building (elevation 4 feet 6 inches).

1.5 inch hose stations and 2.5 inch hose connections available in Fire Area AB-1F.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single smoke detector at ceiling of fire area cubicle.

Heat detection system within the filtration unit.

Control room receives detection alarms/local alarms sound at Zone Panel Number 2E located in the service building west corridor (elevation 4 feet 6 inch).

DESIGN FEATURES

Construction - Refer to Figure 77D for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - No drains for cubicle.

Manual internal water spray system drains for filter.

COMBUSTIBLE LOADING

Floor Area - 711 ft²

Combustible Material

Charcoal Filter Transient Charcoal

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderately Severe

POSTULATED FIRE

The postulated fire is a charcoal fire resulting from a transient ignition source or adsorbent radioactive decay heat.

< 240,000

CONSEQUENCES OF A POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains in the Filter Cubicles

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ANALYSIS 11 – Auxiliary Building Filter Bank, Fire Area AB-10, Zone N/A, Elevation 79 feet 8 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-10 is located adjacent to auxiliary building Fire Area 1-F, the general floor area of elevation 66 feet 6 inches, and above Fire Area AB-9. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety Related

Auxiliary Building Filter Assembly Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression system for the fire area cubicle.

Manually operated, timed cycle, deluge water spray system within the filter unit for protection of charcoal filtration material.

Water flow alarms and valve tamper supervision provided with signals to control room and local Zone Panel Number 2E located in the service building (elevation 4 feet inches).

1.5 inch hose stations and 2.5 inch hose connections available in Fire Area AB-1F.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single smoke detector at ceiling of fire area cubicle. Heat detection system within the filtration unit.

Control room receives detection alarms/local alarms sound at Zone Panel Number 2E located in the service building west corridor (elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figure 77D for a physical description of this area.

Three hour fire -rated construction provided between adjacent fire areas.

Drainage - No drains for cubicle.

Manual internal water spray system drains for filter.

COMBUSTIBLE LOADING

Floor Area - 711 ft²

Combustible Material

Charcoal Filter Transient Charcoal

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderately Severe

POSTULATED FIRE

The postulated fire is a charcoal fire resulting from a transient ignition source or adsorbent radioactive decay heat.

< 240,000

CONSEQUENCES OF A POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains in the Filter Cubicles.

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ANALYSIS 12 – Supplementary Leak Collection Filter Bank, Fire Area AB-11, Zone N/A, Elevation 66 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-11 is located adjacent to auxiliary building Fire Area 1-F; the general floor area of elevation 66 feet 6 inches, and below Fire Area AB-12. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety Related

Supplementary Leak Collection and Release Filter Assembly and Fan Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression system for the fire area cubicle.

Manually operated, timed cycle, deluge water spray system within the filter unit for protection of charcoal filtration material.

Water flow alarms and valve tamper supervision provided with signals to control room and local Zone Panel Number 2E located in the service building (elevation 4 feet 6 inches).

1.5 inch hose stations and 2.5 inch hose connections available in Fire Area AB-1F.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single smoke detector at ceiling of fire area cubicle. Heat detection system within the filtration unit.

Control room receives detection alarms/local alarms sound at Zone Panel Number 2E located in the service building west corridor (elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figure 77D for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - No drains for cubicle.

Manual internal water spray system drains for filter.

COMBUSTIBLE LOADING

Floor Area - 683 ft²

Combustible Material

Charcoal Filter Transient Charcoal

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderate

POSTULATED FIRE

The postulated fire is a charcoal fire resulting from a transient ignition source or adsorbent radioactive decay heat.

< 160,000

CONSEQUENCES OF A POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains in the Filter Cubicles.

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).
AUXILIARY BUILDING

ANALYSIS 13 – Supplementary Leak Collection Filter Bank, Fire Area AB-12, Zone N/A, Elevation 78 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-12 is located adjacent to auxiliary building Fire Area 1-F; the general floor area of elevation 66 feet 6 inches, and above Fire Area AB-11. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety Related

Supplementary Leak Collection and Release Filter Assembly and Fan Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression system for the fire area cubicle.

Manually operated, timed cycle, deluge water spray system within the filter unit for protection of charcoal filtration material.

Water flow alarms and valve tamper supervision provided with signals to control room and local Zone Panel Number 2E located in the service building (elevation 4 feet 6 inches).

1.5 inch hose stations and 2.5 inch hose connections available in Fire Area AB-1F and AB-8.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single smoke detector at ceiling of fire area cubicle. Heat detection system within the filtration unit.

Control room receives detection alarms/local alarms sound at Zone Panel Number 2E located in the service building west corridor (elevation 4 feet 6 inches).

AUXILIARY BUILDING (CONT'D)

DESIGN FEATURES

Construction - Refer to Figure 77D for a physical description of this area.

Three hour fire rated construction provided between adjacent areas with the exception of the Supplemental Leak Collection Rate System (SLCRS) ductwork, which penetrates the east wall. The SLCRS ductwork is enclosed in a one hour fire rated wrap with a three hour fire rated damper, which is located away from the fire wall penetration. Refer to Appendix B, Section C.5.a(4) for further information.

Drainage - No drains for cubicle.

Manual internal water spray system drains for filter.

COMBUSTIBLE LOADING

Floor Area - 683 ft²

Combustible Material

Charcoal Filter Transient Charcoal

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 160.000

Moderate

POSTULATED FIRE

The postulated fire is a charcoal fire resulting from a transient ignition source or adsorbent radioactive decay heat.

CONSEQUENCES OF A POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains in the Filter Cubicles.

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

AUXILIARY BUILDING

ANALYSIS 14 – East MCC and Rod Control Area, Fire Area AB-5, Zone N/A, Elevation 4 feet 6 inches, 24 feet 6 inches, and 43 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building and west of the fuel and waste disposal buildings.

Fire Area AB-5 is south of Fire Area AB-1A on elevation 4 feet 6 inches, south of Fire Areas AB-1C and AB-1D on elevation 24 feet 6 inches and south of Fire Area AB-1E on elevation 43 feet 6 inches There is safe shutdown equipment in this area. Hose reel is provided near shaft to electrical tunnel at elevation 24 feet 6 inches and supplied by adjacent hose station.

MAJOR EQUIPMENT

Safe Shutdown

Emergency Load Center Motor Control Center Distribution and Isolation Panels Cables

Safety Related

Distribution Panels Radiation Microprocessor and Monitors Cables

Non Safety Related

Motor Control Center Transformers Cables

FIRE PROTECTION

Suppression - Manual actuation total flooding CO₂ suppression system. CO₂ can be actuated at the local Chemetron CO₂ control panel located in the Auxiliary Building elevation 24 feet 6 inches.

1.5 inch hose stations and 2.5 inch hose connections available in Fire Areas AB-1C and AB-1E.

AUXILIARY BUILDING (CONT'D)

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Cross zoned smoke detection is located in this area.

Manual pull stations that activate the CO_2 system are located at the entrance to the area. Detection circuits are arranged to transmit a signal to the control room, to Zone Panel Number 2E located in the service building west corridor (elevation 4 feet 6 inches) and to the Chemetron local control panel located in the auxiliary building (elevation 24 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figures 77A, 77B, and 77C for a physical description of this area.

Three hour fire rated construction provided between adjacent Fire Areas.

Drainage - None

COMBUSTIBLE LOADING

Floor Area -	Elevation 4 feet 6 inches: 233 square feet
	Elevation 24 feet 6 inches: 1,678 square feet
	Elevation 45 feet 6 inches: 1,678 square feet

Combustible Material

- Cable Insulation ⁽¹⁾ Cable Insulation ⁽²⁾ 480 V Load Centers ⁽²⁾ 480 V MCC ⁽²⁾ Control Panels ⁽²⁾ Cable Insulation ⁽³⁾ 480 V Load Centers ⁽³⁾ 480 V MCC ^(c)
- (1). 4 feet 6 inches
- (2). 24 feet 6 inches
- (3). 45 feet 6 inches

AUXILIARY BUILDING (CONT'D)

SEVERITY CLASSIFICATION	FIRE LOADING VALUE (BTU/FT ²)
Severe	240,000 or above
Moderately Severe	< 240,000
Moderately Severe	< 240,000

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains in the East MCC and Rod Control Area

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.6.c.(4) - Hose Stations

A deviation request has been submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11769, dated October 7, 1985 - Docket Number 50-423).

AUXILIARY BUILDING

ANALYSIS 15 – West MCC and Rod Control Area, Fire Area AB-6, Zone A, Elevation 4 feet 6 inches, 24 feet 6 inches and 43 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-6, Zone A, is located south and west of Fire Area AB-1A and north and west of Fire Area AB-1, Zone B on elevation 4 feet 6 inches; south and west of Fire Area AB-5 on elevation 24 feet 6 inches and elevation 45 feet 6 inches This zone communicates directly to Fire Area AB-6, Zone B, through an open shake space area. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Emergency Load Center Motor Control Center Distribution and Isolation Panels Reactor Trip Cabinets Cables

Safety Related

Distribution Panels Radiation Microprocessor and Monitors Cables

Non Safety Related

Motor Control Center

FIRE PROTECTION

Suppression - Manual actuation total flooding CO_2 suppression system. CO_2 can be actuated at the local Chemetron CO_2 control panel located in the Auxiliary Building elevation 24 feet 6 inches.

Hose stream coverage for this zone is provided by 2.5 inch hose with gated wye connection and 100 feet of 1.5 inch hose located in the hose house south of the main steam valve enclosure. Hose reel is provided near shaft to

AUXILIARY BUILDING (CONT'D)

electrical tunnel at elevation 24 feet 6 inches and supplied by adjacent hose station.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Cross zoned smoke detection is located in this area.

Manual pull stations that activate the CO_2 system are located at the entrances to the area. Detection circuits are arranged to transmit a signal to the control room, to Zone Panel Number 2E located in the service building west corridor (elevation 4 feet 6 inches) and to the Chemetron local control panel located in the auxiliary building (elevation 24 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figures 77A, 77B, and 77C for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None

COMBUSTIBLE LOADING

Floor Area - Elevation 4 feet 6 inches: 233 square feet Elevation 24 feet 6 inches: 2,411 square feet Elevation 45 feet 6 inches: 2,411 square feet

Combustible Material

Cable Insulation ⁽¹⁾ Cable Insulation ⁽²⁾ 480 V Load Centers ⁽²⁾ 480 V MCC ⁽²⁾ Control Panels ⁽²⁾ Cable Insulation ⁽³⁾ 480 V Load Centers ⁽³⁾ Control Panel 3 ⁽³⁾ 480 V MCC ⁽³⁾

(1). 4 feet 6 inches

(2). 24 feet 6 inches

(3). 45 feet 6 inches

AUXILIARY BUILDING (CONT'D)

SEVERITY CLASSIFICATION	FIRE LOADING VALUE (BTU/FT ²)
Severe	240,000 or above
Moderate	< 160,000
Moderate	< 160,000

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains in the West MCC and Rod Control Area

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.6.c.(4) - Hose Stations

A deviation request has been submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11769, dated October 7, 1985 - Docket Number 50-423).

AUXILIARY BUILDING

ANALYSIS 16 – West MCC/Rod Control Air Conditioning Unit Room, Fire Area AB-6, Zone B, Elevation 66 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-6, Zone B, involves air conditioning equipment associated with the west MCC/rod control room (Fire Area AB-6A). This area is located at elevation 66 feet 6 inches, and communicates via an open shake space to Fire Area AB-6, Zone A, below. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Air Conditioning Unit Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression system.

1.5 inch hose station and 2.5 inch hose connection available in this area.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection provides general area coverage. Detection alarm transmits to the control room. Local alarms sound at Zone Panel Number 2E located in the Service Building west corridor, elevation 4 feet 6 inches.

DESIGN FEATURES

Construction - Refer to Figure 77D for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains provided.

AUXILIARY BUILDING (CONT'D)

COMBUSTIBLE LOADING

Floor Area - 499 ft²

SEVERITY CLASSIFICATION

Insignificant

FIRE LOADING VALUE (BTU/FT²)

< 6,500

POSTULATED FIRE

The postulated fire is ignition of fan motor or electrical cable from an electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

AUXILIARY BUILDING

ANALYSIS 17 – East MCC/Rod Control Air Conditioning Unit Room, Fire Area AB-8, Zone N/A, Elevation 66 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The auxiliary building is located north of the containment structure, east of the service building, and west of the fuel and waste disposal buildings.

Fire Area AB-8 involves air conditioning equipment associated with the east MCC/rod control room (Fire Area AB-5). This area located on elevation 66 feet 6 inches, adjacent to Fire Area AB-1, Zone F, and Fire Area AB-6, Zone B. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Air Conditioning Unit Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression system.

1.5 inch hose station and 2.5 inch hose connections available in Fire Area AB-6B.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection provides general area coverage. Detection alarm transmits to the control room. Local alarms sound at Zone Panel Number 2E located in the Service Building west corridor, elevation 4 feet 6 inches.

DESIGN FEATURES

Construction - Refer to Figure 77D for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains provided.

AUXILIARY BUILDING (CONT'D)

COMBUSTIBLE LOADING

Floor Area - 444 ft²

SEVERITY CLASSIFICATION

Insignificant

FIRE LOADING VALUE (BTU/FT²)

< 6,500

POSTULATED FIRE

The postulated fire is ignition of fan motor or electrical cable from an electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

BORON RECOVERY TANK ENCLOSURE

ANALYSIS 18 – Boron Recovery Tank Enclosure, Fire Area BRT-1, Zone N/A, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The boron recovery tank enclosure is located 20 feet south of the reserve transformers and approximately 200 feet east of the waste disposal building. This area is located adjacent to the pipe tunnel leading to the waste disposal building Fire Area WDB-1A (elevation 4 feet 6 inches). There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Boron Recovery Tanks

FIRE PROTECTION

Suppression - No fixed suppression system.

2.5 inch hose streams available from outside hose houses approximately 150 feet distant.

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - None

DESIGN FEATURES

Construction - Refer to Figure 77B for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

The 18 foot high concrete wall surrounding the boron recovery tanks provides a degree of protection from a fire originating outside to BRT-1.

Drainage - An 18 foot high concrete wall surrounds BRT-1 on all sides and is designed to contain the inventory of the boron recovery tanks in the event of tank rupture.

COMBUSTIBLE LOADING

Floor Area - 2,555 ft^2

MPS-3 FPER

BORON RECOVERY TANK ENCLOSURE (CONT'D)

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Insignificant

< 6,500

POSTULATED FIRE

The postulated fire is an exposure fire from the oil-filled reserve station transformers (Fire Areas XR-5 and XR-6) or the SBO Diesel Enclosure, both adjacent to BRT-1.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

CIRCULATING AND SERVICE WATER PUMPHOUSE

ANALYSIS 19 – North Floor Area, Sodium Hypochloride Room and Service Water Valve Access Enclosure, Fire Area CSW-1, Zones A, B, and C, Elevation 14 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The circulating and service water pumphouse is located on the southwest corner of the site, approximately 350 feet to the west of the condensate polishing facility.

Fire Area CSW-1 involves three distinct zones:

Zone A - North Floor Area; Zone B - Sodium Hypochloride Room;

Zone C - Service Water Valve Access Enclosure.

There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety Related

Zone A -	Circulating Water Pumps	
	Circulating Service Water Pumphouse Fans	
	Screen Wash Strainers and Pumps	
	Cables	
Zone B -	Chlorinator and Eductor	
	Evaporator	
	Residual Chlorine Analyzer	
	Chlorination Water Booster Pump	
Zone C -	Cables	

FIRE PROTECTION

Suppression - All Zones - No fixed suppression systems.

1.5 inch and 2.5 inch hoses provided from outside hose house located against outside north wall of Zone A.

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Zone A - Single zone smoke detectors provided for all areas with appreciable combustible loading.

CIRCULATING AND SERVICE WATER PUMPHOUSE (CONT'D)

Alarms transmitted to control room/local alarms to Zone Panel Number 7A located in the control building elevation 4 feet 6 inches.

Zone B - No detection

Zone C - No detection.

DESIGN FEATURES

Construction - Refer to Figures 77A and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains discharge to ocean.

COMBUSTIBLE LOADING

Floor Area - Zone A – 3,023 square feet Zone B – 275 square feet Zone C – 248 square feet

Combustible Material

Cable Insulation Lube Oil Transient Lube Oil Control Panel ⁽¹⁾

SEVERITY CLASSIFICATION	FIRE LOADING VALUE (BTU/FT ²)	
Zone A - Low	< 80,000	
Zone B - Insignificant	< 6,500	
Zone C - Insignificant	< 6,500	

POSTULATED FIRE

The postulated fire in Zone A is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault. There is no postulated fire in Zones B and C due to the negligible combustible loading.

)1) Zone B combustible.

CIRCULATING AND SERVICE WATER PUMPHOUSE (CONT'D)

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.6.c.(4) - Hose Sections

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11769, dated October 7, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.5.b.(2) - Separation of Cables and Equipment

A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11534, dated July 25, 1985 - Docket Number 50-423). (Revised March 10, 1986, to reflect present plant conditions.)

CIRCULATING AND SERVICE WATER PUMPHOUSE

ANALYSIS 20 – South Floor Area, Fire Area CSW-2, Zone N/A, Elevation 14 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The circulating and service water pumphouse is located on the southwest corner of the site approximately 350 feet to the west of the condensate polishing facility.

Fire Area CSW-2 involves the entire south floor area and houses screens for filtering incoming seawater for service and circulating pumps. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety Related

Fish Troughs Traveling Water Screens Trash Cart Traversing Trash Rake Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch and 2.5 inch hoses available from hydrant, hose house, and hose cart located at a yard hydrant adjacent to the condensate polishing facility.

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in areas above cable trays only.

Alarms transmit to the control room/local alarms sound at Zone Panel Number 7A located in the control building elevation 4 feet 6 inches.

DESIGN FEATURES

Construction - Refer to Figures 77A and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains discharge to ocean.

CIRCULATING AND SERVICE WATER PUMPHOUSE (CONT'D)

COMBUSTIBLE LOADING

Floor Area - 4,037 ft²

Combustible Material

Cable Insulation Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.6.c.(4) - Hose Stations

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11769, dated October 7, 1985 - Docket Number 50-423). (Revised to reflect present plant conditions (March 10, 1986).)

CIRCULATING AND SERVICE WATER PUMPHOUSE

ANALYSIS 21 – East Service Water Cubicle, Fire Area CSW-3, Zone N/A, Elevation 14 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The circulating and service water pumphouse is located on the southwest corner of the site, approximately 350 feet to the west of the condensate polishing facility.

Fire Area CSW-3 involves the east service water pump cubicle only. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Service Water Pumps Service Water Pumphouse Fans Motor Control Center - Emergency Cables

Safety Related

Service Water Self Cleaning Strainer Service Water Pump Strainer Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch and 2.5 inch hoses provided from hose house located outside the north floor area.

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors cover entire area.

Alarms transmitted to control room/local alarms to Zone Panel Number 7A located in the control building elevation 4 feet 6 inches.

CIRCULATING AND SERVICE WATER PUMPHOUSE (CONT'D)

DESIGN FEATURES

Construction - Refer to Figures 77A and 77F for a physical description of this area. Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains discharge to ocean.

COMBUSTIBLE LOADING

Floor Area - 923 ft²

Combustible Material

Cable Insulation 480 Volt MCC Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 80,000

Low

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area does not comply with the specific requirements of Section C.5.b of BTP CMEB 9.5-1. An alternative means of compliance is provided in a deviation request submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11534, dated July 25, 1985 - Docket Number 50-423).

DEVIATION

BTP CMEB 9.5-1 Section C.6.c.(4) - Hose Stations

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11769, dated October 7, 1985 - Docket Number 50-423). (Revised March 10, 1986, to reflect present plant conditions.)

CIRCULATING AND SERVICE WATER PUMPHOUSE (CONT'D)

BTP CMEB 9.5-1 Section C.5.b.(2) - Separation of Cables and Equipment

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11534, dated July 25, 1985 - Docket Number 50-423).

CIRCULATING AND SERVICE WATER PUMPHOUSE

ANALYSIS 22 – West Service Water Cubicle, Fire Area CSW-4, Zone N/A, Elevation 14 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The circulating and service water pumphouse is located on the southwest corner of the site, approximately 350 feet to the west of the condensate polishing facility.

Fire Area CSW-4 involves the west service water pump cubicle only. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Service Water Pumps Service Water Pumphouse Ventilation Fans Motor Control Center - Emergency Cables

Safety Related

Service Water Self Cleaning Strainer Service Water Pump Strainer Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch and 2.5 inch hoses provided from hose house located outside the north floor area.

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors cover entire area.

Alarms transmitted to control room/local alarms to Zone Panel Number 7A located in the control building elevation 4 feet 6 inches.

CIRCULATING AND SERVICE WATER PUMPHOUSE (CONT'D)

DESIGN FEATURES

Construction - Refer to Figures 77A and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains discharge to ocean.

COMBUSTIBLE LOADING

Floor Area - 923 ft²

Combustible Material

Cable Insulation 480 Volt MCC Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 80,000

Low

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area does not comply with the specific requirements of Section C.5.b of BTP CMEB 9.5-1. An alternative means of compliance is provided in a deviation request submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11534, dated July 25, 1985 - Docket Number 50-423).

DEVIATION

BTP CMEB 9.5-1 Section C.6.c.(4) - Hose Stations

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11769, dated October 7, 1985 - Docket Number 50-423). (Revised March 10, 1986, to reflect present plant conditions.)

CIRCULATING AND SERVICE WATER PUMPHOUSE (CONT'D)

BTP CMEB 9.5-1 Section C.5.b.(2) - Separation of Cables and Equipment

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11534, dated July 25, 1985 - Docket Number 50-423).

CONTAINMENT STRUCTURE

ANALYSIS 23 – Containment Structure, Fire Area RC-1, Zone N/A, Elevation (-)24 feet 6 inches through 51 feet 4 inches

GENERAL FIRE AREA DESCRIPTION

The containment structure is located south of the auxiliary building and fuel building, east of the engineering safety features building, and west of the main steam valve enclosure.

Fire Area RC-1 involves the entire containment area. elevation 51 feet 4 inches is the highest floor level in this structure. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Reactor Steam Generators Pressurizer Regenerative Heat Exchanger Excess Letdown Heat Exchanger Safety Injection Accumulator Tank Process Instrumentation Cables

Safety Related

Cables

Non Safety Related

Reactor Coolant Pumps Cables

FIRE PROTECTION

Suppression - Automatic closed head wet pipe sprinkler system for the containment electrical penetrations area. This is the only fixed sprinkler system in containment.

Water flow alarm provided with signal transmission to the control room/local alarm sounds at Zone Panel Number 1-B located in the auxiliary building elevation 45 feet 6 inches within Fire Area AB-6A.

Isolation valves on fire water line to the electrical penetrations area are monitored at the control room main fire protection panel and main control

CONTAINMENT STRUCTURE (CONT'D)

board. The containment isolation valves are monitored at the main control board, and the sprinkler OS&Y isolation is monitored on the main fire protection panel.

1.5 inch hose stations and 2.5 inch hose connections provided on all floor elevations in the annulus area.

Portable fire extinguishers provided at entrance to containment structure in auxiliary building elevation 24 feet 6 inches when plant is operating. During shutdown/refueling periods, portable extinguishers provided based on NFPA Standard Number 10 guidelines.

Detection - Single zone heat detectors located in the lowest level of containment and in reactor coolant pump cubicles.

Single zone smoke detection located in electrical penetrations area as well as the upper elevation of reactor containment in the annulus area except elevation 51 feet 4 inches.

Detection alarms transmit as described above in the suppression section

DESIGN FEATURES

Construction - Refer to Figures 77A, 77B, 77C, 77D and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

- Drainage Floor drains provided at elevation 3 feet 8 inches and (-) 24 feet 6 inches.
- Oil Collection System The reactor coolant pumps are provided with a seismically designed oil collection system to contain the entire lube oil inventory for each pump.
- Cable Trays Silicone foam or metal bottoms are installed in selected trays for fire control in the annulus, elevation 3 feet 8 inches.

COMBUSTIBLE LOADING

Floor Area - 15,394 ft²

Combustible Material

Cable Insulation Lube Oil Charcoal Transient Lube Oil Transient Charcoal Transient Resin

CONTAINMENT STRUCTURE (CONT'D)

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderate

< 160,000

POSTULATED FIRE

The postulated fire is a cable insulation or lubricating oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area does not comply with the specific requirements of Section C.7.a of BTP CMEB 9.5-1. An alternative means of compliance is provided in a deviation request submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423).

DEVIATIONS

BTP CMEB 9.5-1 Section C.7.a.(1)(b) - Separation of Cables and Equipment

A deviation request has been submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11761, dated October 1, 1985 - Docket Number 50-423). Approval documented in SSER4, December 9, 1985. The deviation is further clarified and defined in a letter to the NRC, B16607, from M. H. Brothers, dated November 13, 1997. Docket Number 50-423.

BTP CMEB 9.5-1 Section C.5.a.(3) - Electrical Penetrations in Containment

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11534, dated July 25, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.5.a.(5) - Containment Access Hatch

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11534, dated July 25, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.6.f. - Portable Fire Extinguishers in Containment

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11534, dated July 25, 1985 - Docket Number 50-423).

CONTROL BUILDING

ANALYSIS 24 – West Switchgear Area, Fire Area CB-1, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building.

Fire Area CB-1 is located on the west half of the control building elevation 4 feet 6 inches and is adjacent to the redundant east switchgear area. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

4.16 kV Switchgear
480 V Emergency Unit Substation Bus
Emergency MCC Panel
Auxiliary Shutdown Panel
Air Conditioner (Main & Backup)
Transfer Panel
Battery Charger
Vital Bus Isolation Transformer
Isolation Panel (Emergency)
Cables

Safety Related

Manual Bypass Switch Static Inverter Line Regulators Cables

Non Safety Related

4.16 kV SwitchgearAuxiliary Communication/Emergency Lighting PanelCables120 Volt Uninterruptible Power Supply (UPS)

CONTROL BUILDING (CONT'D)

FIRE PROTECTION

Suppression - Manual actuation total flooding CO₂ suppression system. CO₂ can be actuated at the local Chemetron CO₂ panel located in the Service Building, East Corridor, elevation 24 feet 6 inches.

1.5 inch hose stations available in area.

2.5 inch hose connection available in technical support center elevation 26 feet 8 inches.

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Cross zoned smoke detection is located in this area.

Detection circuits are arranged to transmit a signal to the control room, to the local Zone Panel Number 4E located in the service building west corridor (elevation 4 feet 6 inches), and to the Chemetron panel located in the service building east corridor (elevation 24 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figures 77A and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - 5,395 ft²

Combustible Material

Cable Insulation 4160 Volt Switchgear 480 Volt Load Center 480 Volt MCC Control Panels Miscellaneous plastic Fiberglass box Batteries for 120 Volt UPS

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderately Severe

< 240,000

CONTROL BUILDING (CONT'D)

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A detailed deviation request package dealing with the absence of floor drains in the control building and the east and west emergency switchgear areas has been previously transmitted (W. G. Council to B. J. Youngblood letter dated March 23, 1984; FP-20, Switchgear Room Floor Drains). This deviation has been granted by the NRC.

An additional deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

LICENSE AMENDMENT

License Amendment Number 227, issued September 22, 2005, approved a change to the Approved Fire Protection Program allowing the CSA CO_2 system to be modified from automatic to manual actuation. Fire protection features in the switchgear rooms have been enhanced to provide additional assurance to Operations personnel that Fire Safe Shutdown activities can be accomplished safely in the event the CSA CO_2 system is discharged. These enhancements include a fixed air breathing system for use in a CO_2 environment and CO_2/O_2 concentration monitoring equipment installed in the switchgear rooms.

CONTROL BUILDING

ANALYSIS 25 – East Switchgear Area, Fire Area CB-2, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building.

Fire Area CB-2 is located on the east half of the control building elevation 4 feet 6 inches and is adjacent to the redundant west switchgear area. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

4.16 kV Switchgear
480 Volt Emergency Unit Substation Bus Emergency MCC Panel
Air Conditioner (main & backup)
Transfer Panel
Battery Charger
Vital Bus Isolation Transformer
Isolation Panel (Emergency)
Cables

Safety Related

Manual Bypass Switch Static Inverter Line Regulators Cables

Non Safety Related

4.16 kV Switchgear Static Inverter Battery Charger Transformers Electrical Panels Cables

CONTROL BUILDING (CONT'D)

FIRE PROTECTION

Suppression - Manual actuation total flooding CO₂ suppression system. CO₂ can be actuated at the local Chemetron CO₂ control panel located in the Service Building, East Corridor, elevation 24 feet 6 inches.

1.5 inch hose stations and 2.5 inch hose connections available in the service building (elevation 4 feet 6 inches) hallway between the Normal Swgr and East Swgr Areas and at Service Building (elevation 24 feet 6 inches).

2.5 inch hose lines available from yard hydrants northwest and southwest of the control building (approximately 200 foot distance).

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Cross zoned smoke detection is located in this area.

Detection circuits are arranged to transmit signals to the control room, to the local Zone Panel Number 4E located in the service building west corridor (elevation 4 feet 6 inches) and to the Chemetron local control panel located in the service building east corridor (elevation 24 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figures 77A and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None

COMBUSTIBLE LOADING

Floor Area - 5,191 ft²

Combustible Material

Cable Insulation 4160 Volt Switchgear 480 Volt Load Center 480 Volt MCC Control Panels

CONTROL BUILDING (CONT'D)

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderate

< 160,000

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A detailed deviation request package dealing with the absence of floor drains in the control building and the east and west emergency switchgear areas has been previously transmitted (W. G. Council to B. J. Youngblood letter dated March 23, 1984; FP-20, Switchgear Room Floor Drains). This deviation has been granted by the NRC.

An additional deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

LICENSE AMENDMENT

License Amendment Number 227, issued September 22, 2005, approved a change to the Approved Fire Protection Program allowing the CSA CO_2 system to be modified from automatic to manual actuation. Fire protection features in the switchgear rooms have been enhanced to provide additional assurance to Operations personnel that Fire Safe Shutdown activities can be accomplished safely in the event the CSA CO_2 system is discharged. These enhancements include a fixed air breathing system for use in a CO_2 environment and CO_2/O_2 concentration monitoring equipment installed in the switchgear rooms.

CONTROL BUILDING

ANALYSIS 26 – Battery Room 1, Fire Area CB-3, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building. Battery Room Number 1 is located in the east switchgear room.

Fire Area CB-3 is located within Fire Area CB-2 (east switchgear room) along the east wall. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Battery Bank Cables

Safety Related

Battery Room Exhaust Fan

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hoses and 2.5 inch hose connections available in the Service Building, elevation 4 feet 6 inches hallway between the Normal Switchgear and East Switchgear Areas and at Service Building, elevation 24 feet 6 inches.

2.5 inch hose lines available from yard hydrants northwest and southwest of the control building (approximately 200 foot distance).

Portable extinguishers provided in vicinity based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection.

Control room receives detection alarms/local alarms sound at Zone Panel Number 4E located in the service building west corridor (elevation 4 feet inches).

CONTROL BUILDING (CONT'D)

DESIGN FEATURES

Construction - Refer to Figure 77A for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas

Drainage - None.

Ventilation - System provided to maintain hydrogen concentration below 2 percent.

COMBUSTIBLE LOADING

Floor Area - 211 ft²

Combustible Material

Batteries

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderate

< 160,000

POSTULATED FIRE

The postulated fire is a battery casing fire resulting from a transient ignition source or an electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).
ANALYSIS 27 – Battery Room 2, Fire Area CB-4, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building. Battery Room Number 2 is located in the west switchgear room.

Fire Area CB-4 is located within Fire Area CB-1 (west switchgear room) along the west wall. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Battery Bank Cables

Safety Related

Battery Room Exhaust Fan

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hoses available in Fire Area CB-1.

2.5 inch hose connections available in CB-1 and in the technical support center.

2.5 inch hose lines available from yard hydrants northwest and southwest of the control building (approximately 150 foot distant)

Portable extinguishers provided in vicinity based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection.

Control room receives detection alarms/local alarms sound at Zone Panel Number 4E located in the service building west corridor (elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figure 77A and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

Ventilation - System maintains hydrogen concentration below 2 percent.

COMBUSTIBLE LOADING

Floor Area - 243 ft²

Combustible Material

Batteries

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a battery casing fire resulting from a transient ignition source or an electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ANALYSIS 28 – Battery Room 3, Fire Area CB-5, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building. Battery Room Number 3 is located in the east switchgear room.

Fire Area CB-5 is located within Fire Area CB-2 (east switchgear room) along the east wall. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Battery Bank Cables

Safety Related

Battery Room Exhaust Fan

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hoses and 2.5 inch hose connections available in the Service Building elevation 4 feet 6 inches hallway between the Normal Switchgear and East Switchgear areas and at the Service Building elevation 24 feet 6 inches.

2.5 inch hose lines available from yard hydrants northwest and southwest of the control building (approximately 200 foot distance).

Portable extinguishers provided in vicinity based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection.

Control room receives detection alarms/local alarms sound at Zone Panel Number 4E located in the service building west corridor elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figure 77A for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

Ventilation - System maintains the hydrogen concentration below 2 percent.

COMBUSTIBLE LOADING

Floor Area - 166 ft²

Combustible Material

Batteries

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderate

< 160,000

POSTULATED FIRE

The postulated fire is a battery casing fire resulting from a transient ignition source or an electric fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ANALYSIS 29 – Battery Room 4, Fire Area CB-6, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building. Battery Room Number 4 is located in the west switchgear room.

Fire Area CB-6 is located within Fire Area CB-1 (west switchgear room) along the west wall. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Battery Bank

Cables

Safety Related

Battery Room Exhaust Fan

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hoses available in Fire Area CB-1

2.5 inch hose connections available in CB-1 and the technical support center.

2.5 inch hose lines available from yard hydrants northwest and southwest of the control building (approximately 150 foot distant).

Portable extinguishers provided in vicinity based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection.

Control room receives detection alarms/local alarms sound at Zone Panel Number 4E located in the service building west corridor (elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figure 77A and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

Ventilation - System maintains hydrogen concentration below 2 percent.

COMBUSTIBLE LOADING

Floor Area - 165 ft^2

Combustible Material

Batteries

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 160,000

Moderate

POSTULATED FIRE

The postulated fire is a battery casing fire resulting from a transient ignition source or an electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ANALYSIS 30 – Battery Room 5, Fire Area CB-7, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building. Battery Room Number 5 is located in the east switchgear room.

Fire Area CB-7 is located within Fire Area CB-2 (east switchgear room) along the east wall. There is safety-related safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety Related

Battery Bank

Cables

Non Safety Related

Battery Room Exhaust Fan

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hoses and 2.5 inch hose connections available in the Service Building elevation 4 feet 6 inches hallway between the Normal Switchgear and East Switchgear areas and at the Service Building elevation 24 feet 6 inches.

2.5 inch hose lines available from yard hydrants northwest and southwest of the control building (approximately 200 foot distance).

Portable extinguishers provided in vicinity based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection.

Control room receives detection alarms/local alarms sound at Zone Panel Number 4E located in the service building west corridor elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figure 77A for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

Ventilation - System maintains the hydrogen concentration below 2 percent.

COMBUSTIBLE LOADING

Floor Area - 270 ft^2

Combustible Material

Batteries

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 80,000

Low

POSTULATED FIRE

The postulated fire is a battery casing fire resulting from a transient ignition source or an electric fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ANALYSIS 31 – Electrical Equipment Room, West Switchgear Area, Fire Area CB-16, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building.

Fire Area CB-16 is located in the west switchgear area adjacent to Fire Area CB-6 (Battery room 4). There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Battery Chargers Distribution Panels Regulating Transformer Cables

Safety Related

Static Inverter Vital Bus Isolation Transformer Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hoses available in Fire Area CB-1.

2.5 inch hose connections available in CB-1 and in the technical support center.

2.5 inch hose lines available from yard hydrants northwest and southwest of the control building (approximately 150 foot distance).

Portable extinguishers provided in vicinity based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection.

Control room receives detection alarms/local alarms sound at Zone Panel Number 4E located in the service building west corridor (elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figure 77A for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - 229 ft^2

Combustible Material

Control Panels

SEVERITY CLASSIFICATION

Insignificant

FIRE LOADING VALUE (BTU/FT²)

< 6,500

POSTULATED FIRE

The postulated fire is a cable insulation fire in a distribution panel resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been previously transmitted (W.G. Council to B.J. Youngblood letter dated March 23, 1984; FP-20, Switchgear Room Floor Drain). This deviation has been granted by the NRC.

An additional deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ANALYSIS 32 – Electrical Equipment Room, East Switchgear Area, Fire Area CB-17, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building.

Fire Area CB-17 is located within the east switchgear area adjacent to Fire Areas CB-5 and CB-7 (battery rooms 3 and 5, respectively). There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Battery Chargers Distribution Panels Regulating Transformer Cables

Safety Related

Static Inverter Vital Bus Isolation Transformer Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hoses and 2.5 inch hose connections available in the Service Building elevation 4 feet 6 inches hallway between the Normal Switchgear and East Switchgear areas and at the Service Building elevation 24 feet 6 inches.

2.5 inch hose lines available from yard hydrants northwest and southwest of the control building (approximately 200 foot distance).

Portable extinguishers provided in vicinity based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection.

Control room receives detection alarms/local alarms sound at Zone Panel Number 4E located in the service building west corridor (elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figure 77A for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - 183 ft²

Combustible Material

Control Panels

SEVERITY CLASSIFICATION

Insignificant

FIRE LOADING VALUE (BTU/FT²)

< 6,500

POSTULATED FIRE

The postulated fire is a cable insulation fire in a distribution panel resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been previously transmitted (W.G. Counsil to B.J. Youngblood letter dated March 23, 1984; FP-20, Switchgear Room Floor Drains). This deviation has been granted by the NRC.

An additional deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ANALYSIS 33 – Neutron Monitor - Junction Box Area, East Switchgear Area, Fire Area CB-18 (Deleted)

This page intentionally blank - analysis deleted.

ANALYSIS 34 – Cable Spreading Area, Fire Area CB-8, Zone N/A, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building.

Fire Area CB-8 involves the entire elevation 24 feet 6 inches of the control building. There is safe shutdown equipment and cable in this area.

MAJOR EQUIPMENT

Safe Shutdown

Isolation Panels (2)

Cables

Safety Related

Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - Manual actuation total flooding CO₂ suppression system. CO₂ can be actuated at the local Chemetron CO₂ control panel located in the Service Building, East Corridor, elevation 24 feet 6inches.

1.5 inch dry hose stations available in area. 1.5 inch dry continuous flow hose reels located throughout area.

2.5 inch hose connections available in the control building stairwell on this elevation, the technical support center (elevation 11 feet 6 inches) and the service building (elevation 24 feet 6 inches). 2.5 inch fire department connection located in north wall.

Portable extinguishers provided in vicinity based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Cross zoned smoke detection is located in this area. In addition, a sampling type incipient fire detection system (IFD) is installed in the cable spreading room.

The smoke detection circuits transmit a signal to the control room, to the local Zone Panel Number 4E located in the service building west corridor (elevation 4 feet 6 inches) and to the Chemetron local control panel located in the service building east corridor (elevation 24 feet 6 inches).

The IFD transmits signals to the control room and local Zone Panel Number 4E.

DESIGN FEATURES

Construction - Refer to Figure 77B and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - 11,284 ft^2

Combustible Material

Cable Insulation

Control Panels

SEVERITY CLASSIFICATION

Moderately Severe

FIRE LOADING VALUE (BTU/FT²)

< 240,000

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.c of BTP CMEB 9.5-1, as approved by the NRC in SSER 4, and documented in the Millstone 3 safe shutdown analysis. Alternative shutdown capability is provided utilizing the auxiliary shutdown and transfer switch panels, located in the west and east switchgear rooms (Fire Areas CB-1and 2), respectively. This area

does not comply with the specific requirements of Sections C.7.c. An alternative means of compliance with C.7.c was provided for in a deviation request submitted to the NRC (in Letter B1194, dated April 30, 1985), and approved in SSER 2. The CO_2 suppression system was modified from automatic to manual actuation, evaluated and found acceptable (86-10 evaluation FP-EV-01-002, "MP3 CSA CO_2 System with IFD System and Manual Fire Fighting Capabilities"). License Amendment Number 227, issued September 22, 2005, provides NRC approval of the conversion from automatic to manual actuation. The IFD system and manual fire fighting features provide the primary fire protection capability for this area. The manual CO_2 system provides fixed backup suppression capability for the area.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request was submitted to the NRC, Letter B11658, dated August 16, 1985, and approved in SSER 4.

BTP CMEB 9.5-1 Section C.7.c - Cable Spreading Room Protection

A deviation request was submitted to the NRC, Letter B11494, dated April 30, 1985, and approved in SSER 2. This deviation was superseded by License Amendment Number 227, issued September 22, 2005, which approved a change to the fixed CO_2 system from automatic to manual actuation.

BTP CMEB 9.5-1 Section C.5.a.(1) - Fire Proofing of Structural Steel

A deviation request was submitted to the NRC, Letter B11669, dated August 29, 1985, and approved in SSER 4.

LICENSE AMENDMENT

License Amendment Number 227, and the included NRC Safety Evaluation, issued September 22, 2005, approved a change to the Approved Fire Protection Program allowing the CSA CO_2 system to be modified from automatic to manual actuation. Fire protection features in this fire area have been enhanced to provide additional fire detection and suppression capabilities. The enhancements include an IFD system and additional manual fire fighting features (continuous flow hose reels, fire extinguishers, etc.), and provide the primary fire protection capability for this area. The manual CO_2 system provides fixed backup suppression capability for the area.

86-10 EVALUATION

FP-EV-01-0002, "MPS CSA CO_2 System with IFD System and Manual Fire Fighting Capabilities," evaluated and found acceptable the fire protection capabilities provided for the CSA. The IFD system and manual fire fighting features provide the primary fire protection capability, while the manual CO_2 system provides fixed backup suppression.

ANALYSIS 35 – Control Room, Fire Area CB-9, Zone N/A, Elevation 47 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building.

Fire Area CB-9 involves the open control room floor area on elevation 47 feet 6 inches of the control building. There is safe shutdown equipment and cable in this area.

MAJOR EQUIPMENT

Safe Shutdown

Main Control Board and Associated Panels Main Heating and Ventilation Panel Nuclear Instrumentation Panels Cables

Safety Related

Radwaste Monitor Instrumentation Panel Cables

Non Safety Related

Operators' Consoles Main Fire Protection Panel Seismic Panel Primary Protective Relay Panel Turbine Supervisory Instrument Cabinet Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose stations and 2.5 inch hose connections located in the service building (elevation 49 feet 6 inches) and the control building stairwell (elevation 24 feet 6 inches and 47 feet 6 inches).

2.5 inch outlets in areas noted above.

Portable extinguishers provided in vicinity based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located on the underside of the concrete ceiling.

Ceiling mounted smoke detectors located within the main control board cabinet and in selected areas.

Detection transmits to local Zone Panel Number 4E located in the service building (elevation 4 feet 6 inches) and to the main fire protection panel located within this area.

DESIGN FEATURES

Construction - Refer to Figures 77C and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Eggcrate style suspended ceiling installed throughout the area. Armstrong high performance fiberglass ceiling panels located above suspended ceiling for sound/noise control.

Radiant energy heat shield (Carborundum Duraboard) provides fire separation for atmospheric relief bypass valve (ARBV, 3MSS*MOV74) lockout switches A through D from the remainder of Main Board Number 5.

Floor - Approved flame resistant carpet on concrete floor.

Drainage - None.

Ventilation - Portable fans will be utilized for removal of smoke, CO₂ and/or Halon. This area is considered part of a habitability envelope

COMBUSTIBLE LOADING

Floor Area - 5,357 ft²

Combustible Material

Cable Insulation Control Panels Office Materials Miscellaneous plastic Fiberglass box

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation fire in a control panel resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.c of BTP CMEB 9.5-1, as approved by the NRC in SSER 4, and documented in the Millstone 3 safe shutdown analysis. Alternative shutdown capability is provided, utilizing the auxiliary shutdown and transfer switch panels, located in the west and east switchgear rooms, respectively.

A radiant energy heat shield provides fire separation between ARBV lockout switches and a fire occurring in MB5, per FP-EV-04-0001.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.5.a.(1) - Fire Proofing of Structural Steel

A deviation request has been submitted and transmitted to the NRC (E.J. Mroczka to B.J. Youngblood, Letter B11669, dated August 29, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.7.b - Control Room Complex Peripheral Room Guidelines; Offices, Training Room Viewing Gallery

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.7.b - Smoke Detection in Control Room, Cabinets, and Consoles

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

86-10 EVALUATION

FP-EV-04-001 - Technical Evaluation for 3MSS*MOV74A, B, C and D Control Circuit Hot Short Modification (DCR M3-04002), addresses the adequacy of the installation of control circuit lockout switches protected by a radiant energy heat shield located in the back of Main Board 5 to prevent a fire induced hot short from resulting in spurious opening of the valves.

ANALYSIS 36 – Computer Room and Underfloor Area, Fire Area CB-10, Zones A & B, Elevation 47 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building.

Fire Area CB-10 is located along the east wall of the control room floor (elevation 47 feet 6 inches). There is no safe shutdown equipment in this area. The area is divided into two zones:

Zone A - Computer Room Underfloor

Zone B - Computer Room

MAJOR EQUIPMENT

Non Safety-Related

Zone A -	Cables
Zone B -	Computer Equipment Cables

FIRE PROTECTION

Zone A

Suppression - Automatic operating, total flooding Halon 1301 extinguishing system protecting the entire underfloor area.

1.5 inch hose station and 2.5 inch hose connection available in the service building.

Portable extinguishers provided in Zone B based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone rate compensated heat detection system arranged to actuate the Halon suppression system.

Smoke detection system available to provide early warning prior to halon system discharge. Alarms transmit to the local Halon control panel, to Zone Panel Number 4E located in the service building (elevation 4 feet 6 inches), and to the control room main fire protection panel.

Zone B

Suppression - No fixed suppression.

1.5 inch hose station and 2.5 inch hose connection available in service building.

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection below the solid noncombustible suspended ceiling.

Alarms transmit to Zone Panel Number 4E located in the service building (elevation 4 feet 6 inch) and to the main fire protection panel in the control room.

DESIGN FEATURES

Construction - Refer to Figure 77C for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Zone B has a solid type noncombustible suspended ceiling throughout.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - Zone A - 897 ft^2 Zone B - 960 ft^2

Combustible Material

Cable Insulation ⁽¹⁾ Control Panels Paper Transient Paper

⁽¹⁾ Zone A combustibles only.

SEVERITY CLASSIFICATION	<u>FIRE LOADING VALUE</u> (BTU/FT ²)
Zone A - Moderate	< 160,000
Zone B	< 80,000

POSTULATED FIRE

Zone A: The postulated fire is a cable insulation fire resulting from a transient ignition source or an electric fault.

Zone B: The postulated fire occurs in the computer equipment or containers resulting from a transient ignition source or an electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.5.a.(1) - Fire Proofing of Structural Steel

A deviation request has been submitted and transmitted to the NRC (E.J. Mroczka to B.J. Youngblood, Letter B11669, dated August 29, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.6.d - Maintenance/Testing of Halon Suppression Systems

Presently performed every 18 months. COTRAP File Number A05549, dated January 31, 1986; Issuance of Facility Operating License NPF-49-Millstone Nuclear Power Station, Unit Number 3; Technical Specifications 3.7.12.4, "The Instrument Rack Room Under Floor Area Halon System" Surveillance Requirements identifies the 18 month test frequency.

ANALYSIS 37 – Instrument Rack Room and Underfloor Area, Fire Area CB-11, Zones A and B, Elevation 47 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building.

Fire Area CB-11 involves the instrument rack room and its underfloor area located along the south and west sides of the control building (elevation 47 feet 6 inches). There is safe shutdown equipment in this area. The area is divided into two zones:

Zone A - Instrument Rack Room Underfloor

Zone B - Instrument Rack Room

MAJOR EQUIPMENT

Safe Shutdown

Zone A -	Cables
Zone B -	Main Control Board Termination Cabinets
	Solid State Protection Cabinets
	Auxiliary Relay Racks
	Stop Valve Logic Cabinets
	SWEC Instrument Panels
	Protection Set Panels
	Engineered Safeguards Sequence Panels
	Cables

Safety Related

Zone A -	Cables
Zone B -	Cables

Non Safety Related

Zone A - Cables

Zone B -

Main Control Board Termination Cabinet Auxiliary Relay Cabinet Computer Demultiplexer Computer Terminal Cabinets Vibration and Loose Parts Monitor Cables

FIRE PROTECTION

Zone A - Instrument Rack Room Underfloor

Suppression - Automatic operating, total flooding Halon 1301 extinguishing system protecting the entire underfloor area.

Portable extinguishers provided in Zone B based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone rate compensated heat detection system arranged to actuate the halon suppression system.

Smoke detection system available to provide early warning prior to halon system discharge. Alarms transmit to the local halon control panel, to Zone Panel Number 4E located in the service building (elevation 4 feet 6 inches) and to the control room main fire protection panel.

Zone B - Instrument Rack Room

Suppression - No fixed suppression.

1.5 inch hose stations and 2.5 inch hose connections available in service building and the control building stairwell (elevation 24 feet 6 inches).

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection at the ceiling.

Alarms transmit to Zone Panel Number 4E and to the control room main fire protection panel.

DESIGN FEATURES

Construction - Refer to Figures 77C and 77F for a physical description of this area. Three hour fire rated construction provided between adjacent fire areas. Zone B has a solid noncombustible type suspended ceiling throughout

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - Zone A - $3,916 \text{ ft}^2$ Zone B - $3,916 \text{ ft}^2$

Combustible Material

Cable Insulation ⁽¹⁾ Cable Insulation Control Panels

FIRE LOADING VALUE (BTU/FT ²)
< 160,000
< 80,000

POSTULATED FIRE

Zones A and B: The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.c of BTP CMEB 9.5-1, as approved by the NRC in SSER 4, and documented in the Millstone 3 safe shutdown analysis. Alternative shutdown capability is provided, utilizing the auxiliary shutdown and transfer switch panels, located in the west and east switchgear rooms, respectively.

⁽¹⁾ Zone A combustibles only.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.5.a.(1) - Fire Proofing of Structural Steel

A deviation request has been submitted and transmitted to the NRC (E.J. Mroczka to B.J. Youngblood, Letter B11669, dated August 29, 1985 - Docket Number 50-423).

ANALYSIS 38 – Kitchen Area, Fire Area CB-12, Zone N/A, Elevation 47 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building, and north of the turbine building.

Fire Area CB-12 involves a small kitchen area located west of the main control room floor area on elevation 47 feet 6 inches There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Cable

Non Safety Related

Kitchen appliances

Furniture

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose station and 2.5 inch hose connection in the control building stairwell (elevation 24 feet 6 inches and 47 feet 6 inches).

Portable extinguishers are provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection above suspended ceiling/heat detection below the suspended ceiling.

Alarms transmit to Zone Panel Number 4E located in the service building (elevation 4 feet 6 inches) and to the control room main fire protection panel.

DESIGN FEATURES

Construction - Refer to Figures 77D and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

A solid type noncombustible suspended ceiling exists in this area.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - 279 ft²

Combustible Material

Cable Insulation Cooking Oil Transient Cooking Oil Paper

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or an electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.5.a.(1) - Fire Proofing of Structural Steel

A deviation request has been submitted and transmitted to the NRC (E.J. Mroczka to B.J. Youngblood, Letter B11669, dated August 29, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.5.a.(11) - Concealed Spaces with Combustibles

A deviation request has been submitted and transmitted to the NRC (E.J. Mroczka to B.J. Youngblood, Letter B11669, dated August 29, 1985 - Docket Number 50-423).

ANALYSIS 39 – Chiller Room, Fire Area CB-13, Zone N/A, Elevation 64 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building and north of the turbine building.

Fire Area CB-13 is located along the north wall of the west half of the control building elevation 64 feet 6 inches and is adjacent to Fire Area CB-14 (mechanical equipment room) and Fire Area CB-15 (general support area). There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Supply and Exhaust Fans

Chiller Units

Chilled Water Pumps

Chilled Lube Oil Pumps

Expansion Tanks

Air Conditioner Booster Pumps

Cables

Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose stations with 2.5 inch hose connections available in the general support area (Fire Area CB-15) and the service building.

Portable extinguishers provided based on NFPA standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors.

Control room receives alarms/local alarms sound at Zone Panel Number 4E located in the service building west corridor (elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figures 77D and 77F for a physical description of this area. Three hour fire rated construction provided between adjacent fire areas. A solid type noncombustible suspended ceiling exists in this area.

Drainage - Provided in area of the pumps.

COMBUSTIBLE LOADING

Floor Area - 976 ft²

Combustible Material

Lube Oil

Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 6,500

Insignificant

POSTULATED FIRE

The postulated fire is a minor panel fire initiated from a transient ignition source or an electric fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

ANALYSIS 40 – Mechanical Equipment Room, Fire Area CB-14, Zone N/A, Elevation 64 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The control building is located south of the emergency generator enclosure, west of the service building, and north of the turbine building.

Fire Area CB-14 involves the west half of elevation 64 feet 6 inches of the control building. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Control Room Air-Conditioning Units

Instrument Rack and Computer Room Air-Conditioning Units

Control Room Emergency Vent Filters and Fans

Control Room Air Storage Tank

Control Room Pressurization System

Cables

Non Safety Related

Control Building Purge Fans

Cables

FIRE PROTECTION

Suppression - No fixed suppression system.

1.5 inch hose stations with 2.5 inch hose connections in the adjacent Fire Area TB-2F.

Portable extinguishers provided based on NFPA standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detection provided at elevation 64 feet 6 inches.

Heat Detection system within the Charcoal Filter Units Control room receives alarms/local alarms sound at Zone Panel Number 4E located in the service building (west corridor - elevation 4 feet 6 inches), except for the

Control Building Charcoal Filter Units. Detection for the Charcoal Filter Units alarms directly to VP 1 in the Control Room.

DESIGN FEATURES

Construction - Refer to Figures 77D and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

A solid type noncombustible suspended ceiling exists in this area.

Drainage - Floor drains are provided.

4 inch curbs provided for equipment and at vertical ventilation ducts running through the area.

4 inch flood level protection is provided.

COMBUSTIBLE LOADING

Floor Area - $4,544 \text{ ft}^2$

Combustible Material

Charcoal Transient Charcoal Plastic

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 80,000

Low

POSTULATED FIRE

The postulated fire is a charcoal fire initiated from a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

EMERGENCY GENERATOR ENCLOSURE

ANALYSIS 41 – East Fuel Oil Vault, Fire Area EG-1, Zone N/A, Elevation 14 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The east fuel oil vault is located below grade on the east side of the emergency generator enclosures, north of the control building, and west of the maintenance shop. This vault is located parallel and adjacent to the west fuel oil vault.

Within the vault is a 35,340 gallon cylindrical steel tank holding Number 2 diesel fuel dedicated as supply for the north emergency diesel generator unit. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Emergency Diesel Generator Fuel Oil Storage Tank

Fuel Oil Transfer Pump - Normal

Cables

Safety Related

Fuel Oil Transfer Pump - Swing

Cables

Non Safety Related

Cable

FIRE PROTECTION

- Suppression Fixed automatic operating total flooding CO₂ system actuation alarm transmitted to the control room, local Chemetron panel in the machine shop, and Zone Panel Number 5C located in the cable spreading room.
 - 1.5 inch hose stations available in buildings adjacent to vaults.
 - 2.5 inch hose stations available from two yard hydrants.
- Detection Ceiling mounted smoke detectors arranged on a single zone principle for early warning.
Control room receives smoke detection alarms/local alarms sound at Zone Panel Number 5C located in the cable spreading room.

Ceiling mounted heat detectors arranged on a single zone principle for actuation of the CO_2 suppression system.

Control room receives heat detection alarm/local alarms sound above and within vault, at the local Chemetron panel in the machine shop and at Zone Panel Number 5C located in the cable spreading room.

DESIGN FEATURES

Construction - Refer to Figure 77A for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - 840 ft²

Combustible Material

Diesel Fuel Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Severe

240,000 or above

POSTULATED FIRE

The postulated fire is an oil fire resulting from a leaking tank and a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

EMERGENCY GENERATOR ENCLOSURE

ANALYSIS 42 – West Fuel Oil Vault, Fire Area EG-2, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The west fuel oil vault is located below grade on the east side of the emergency generator enclosures, north of the control building, and west of the maintenance shop. This vault is located parallel and adjacent to the east fuel oil vault.

Within the vault is a 35,340 gallon cylindrical steel tank holding Number 2 diesel fuel dedicated as supply for the south emergency diesel generator unit. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Emergency Diesel Generator Fuel Oil Storage Tank

Fuel Oil Transfer Pump - Normal

Cables

Safety Related

Fuel Oil Transfer Pump - Swing

Cables

Non Safety-Related

Cables

FIRE PROTECTION

- Suppression Fixed automatic operating total flooding CO₂ system/actuation alarm transmitted to the control room, local Chemetron panel in the machine shop, and Zone Panel Number 5C located in the cable spreading room.
 - 1.5 inch hose stations available in buildings adjacent to vaults.
 - 2.5 inch hose stations available from two yard hydrants.
- Detection Ceiling mounted smoke detectors arranged on a single zone principle for early warning.

Control room receives smoke detection alarms/local alarms sound at Zone Panel Number 5C located in the cable spreading room.

Ceiling mounted heat detectors arranged on a single zone principle for actuation of the CO_2 suppression system.

Control room receives heat detection alarm/local alarms sound above and within vault, at the local Chemetron panel in the machine shop and at Zone Panel Number 5C located in the cable spreading room.

DESIGN FEATURES

Construction - Refer to Figure 77A for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - 840 ft²

Combustible Material

Diesel Fuel Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Severe

240,000 or above

POSTULATED FIRE

The postulated fire is an oil fire resulting from a leaking tank and a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

EMERGENCY GENERATOR ENCLOSURE

ANALYSIS 43 – North Emergency Generator Enclosure, Fire Area EG-3, Zones A and B, Elevation 11 feet 6 inches, 24 feet 6 inches and 51 feet 0 inches

GENERAL FIRE AREA DESCRIPTION

Fire Area EG-3 involves the north emergency generator enclosure located north of the control building and west of the machine shop. This enclosure is adjacent to the redundant south generator enclosure. There is safe shutdown equipment in this area.

The area is divided into two zones:

Zone A -	Diesel Generator Unit (Elevation 24 feet 6 inches) and Cable Vault (Elevation 11 feet 6 inches)
Zone B -	Muffler Enclosure (51 feet 0 inches)

MAJOR EQUIPMENT

Zone A - Safe Shutdown

Emergency Diesel Generator:

Fuel Oil Day Tank

Starting Air Tanks

Motor Control Center-Emergency

Cables

Motor Operated Dampers

Fresh Water Expansion Tan

Emergency Diesel Generator Control Panel and Gage Panel

Emergency Diesel Generator Jacket and Intercooling Water Heaters

Diesel Building Isolation Panel

Supply Fans

Safety Related

Oil Separator Crankcase Vacuum Pump Cables

Non Safety Related

Starting Air Compressor

Cables

Electric Unit Heater

Emergency Diesel Generator Air Start Compressor

Zone B - Safe Shutdown

Muffler

Cables

FIRE PROTECTION

Zone A - Diesel Generator and Cable Vault

Suppression - Manually-operated, closed head sprinkler system covers all areas/local water flow alarm and valve tamper supervision transmit to Zone Panel Number 5C located in the cable spreading room and to the control room.

1.5 inch hose station located within the area.

2.5 inch standpipe outlet with 1.5 inch hose available in the west entry vestibule.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Ultra Violet flame detectors covering the diesel generator.

Ceiling mounted (Elevation 50 feet 6 inches) rate compensated heat detectors covering diesel generator area.

Rate compensated heat detectors and smoke detectors covering the cable vault.

Control room receives all detection alarms/local alarms sound at Zone Panel Number 5C located in the cable spreading room.

Zone B - Muffler Enclosure

Suppression - No fixed suppression.

1.5 inch hose station available in Zone A.

2.5 inch hose connection and 1.5 inch hose station available outside Zone A in entry vestibule.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection

None.

DESIGN FEATURES

Construction - Refer to Figures 77B, 77C, and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas

Drainage

Zone A - Floor drains to oils separator/sump pump in cable vault with discharge to floor drains.

Zone B - None.

COMBUSTIBLE LOADING

Floor Area - Zone A - 1,819 ft²

Zone B - 1,952 ft²

Combustible Material

Cable Insulation 480 Volt MCC Control Panels Fuel Oil Lube Oil Paper Transient Lube Oil Plastic

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Zone A Moderately Severe240,000Zone B Insignificant< 6,500</td>

POSTULATED FIRE

The postulated fire is an oil or cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.7.i - Lack of Diking Around the Tank

A deviation request has been granted (W. G. Counsil to B. J. Youngblood, Letter B11090, dated March 23, 1984, Attachment C - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.7.i - Automatic Fire Suppression and Drainage

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11534, dated July 25, 1985 - Docket Number 50-423).

EMERGENCY GENERATOR ENCLOSURE

ANALYSIS 44 – South Emergency Generator Enclosure, Fire Area EG-4, Zones A & B, Elevation 11 feet 6 inches, 24 feet 6 inches & 51 feet 0 inches

GENERAL FIRE AREA DESCRIPTION

Fire Area EG-4 involves the south emergency generator enclosure located north of the control building and west of the machine shop. This enclosure is adjacent to the redundant north generator enclosure.

The area is divided into two zones:

Zone A -	Diesel Generator Unit (Elevation 24 feet 6 inches) and Cable Vault (Elevation 11 feet 6 inches)
Zone B -	Muffler Enclosure (Elevation 51 feet 0 inches)

There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Zone A - Safe Shutdown

Emergency Diesel Generator:

Fuel Oil Day Tank Starting Air Tanks Motor Control Center - Emergency Cables Control Panel and Gage Panel Jacket and Intercooling Water Heaters Diesel Building Isolation Panel Supply Fans

Safety-Related

Oil Separator Crankcase Vacuum Pump Cables

Non Safety-Related

Starting Air Compressor

Cables

Emergency Diesel Generator Air Start Compressor

Zone B - Safe Shutdown

Muffler Cables

FIRE PROTECTION

Zone A - Diesel Generator and Cable Vault

Suppression - Manually operated, closed head sprinkler system covers all areas/local water flow alarm and valve tamper supervision transmit to Zone Panel Number 5 located in the cable spreading room and to the control room.

1.5 inch hose station located within the area.

2.5 inch standpipe outlet with 1.5 inch hose available in the west entry vestibule.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Ultra Violet flame detectors covering the diesel generator.

Ceiling mounted (Elevation 50 feet 6 inches) rate compensated heat detectors covering diesel generator area.

Rate compensated heat detectors and smoke detectors covering the cable vault.

Control Room receives all detection alarms/local alarms sound at Zone Panel Number 5C located in the cable spreading room.

Zone B - Muffler Enclosure

Suppression - No fixed suppression.

1.5 inch hose station available in Zone A.

2.5 inch hose connection and 1.5 inch hose station available outside Zone A in entry vestibule.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - None

DESIGN FEATURES

Construction - Refer to Figures 77B, 77C, and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Zone A - Floor drains to oils separator/sump pump in cable vault with discharge to floor drains.

Zone B - None.

COMBUSTIBLE LOADING

Floor Area - Zone A - 1,819 ft²

Zone B - 1,952 ft²

Combustible Material

Cable Insulation 480 V MCC Control Panels Fuel Oil Lube Oil Transient Lube Oil Plastic

SEVERITY CLASSIFICATION

Zone A Moderately Severe

Zone B Insignificant

FIRE LOADING VALUE (BTU/FT²)

< 240,000 < 6,500

POSTULATED FIRE

The postulated fire is an oil or cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.7.i - Lack of Diking Around the Tank

A deviation request has been granted (W. G. Counsil to B. J. Youngblood, Letter B11090, dated March 23, 1984, Attachment C - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.7.i - Automatic Fire Suppression and Drainage

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11534, dated July 25, 1985 - Docket Number 50-423).

ANALYSIS 45 – South Containment Recirculation Cooler Cubicle, Fire Area ESF-1, Zone N/A, Elevation (-)34 feet 9 inches through 36 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The engineered safety features building is located east of the containment structure and northeast of the hydrogen recombiner building.

Fire Area ESF-1 involves containment recirculation pumps and coolers. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety Related

Containment Recirculation Pumps and Coolers

Radiation Monitors

Cables

Non Safety Related

Containment Recirculation Sump Pumps

Recirculation Cubicle Sump Pump

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inches hose stations with 2.5 inches hose connections located in Fire Areas ESF-3 and -9 (Elevation 21 feet 6 inches).

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in all areas (elevations) where appreciable combustible loading is present.

Control room receives detection alarms/local alarms sound at Zone Panel Number 3B located in the fuel building (Elevation 11 feet 0 inches)

DESIGN FEATURES

Construction - Refer to Figures 77A, 77B, and 77C for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas with the exception of the Supplemental Leak Collection Rate System (SLCRS) ductwork, which is not protected. The penetration of the fire barriers by the duct occurs at the east wall and the ceiling of this area. Refer to Appendix B, Section C.5.a.(4) for further information.

Drainage - Floor drains provided in area.

COMBUSTIBLE LOADING

Floor Area - Elevation (-)34 feet 9 inches: 477 ft²

Elevation 4 feet 6 inches: * ft² Elevation 21 feet 6 inches: * ft² Elevation 36 feet 6 inches: * ft²

Combustible Material

Lube Oil ((-) 34 feet 9 inches) Transient Lube Oil ((-) 34 feet 9 inches) Cable Insulation (4 feet 6 inches) Cable Insulation (21 feet 6 inches) Cable Insulation (36 feet 6 inches)

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 80,000

Low^a

a The Severity Classification is based upon using the floor area of the (-) 34 feet 9 inches elevation as all elevations indicated have grated floors.

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

86-10 EVALUATION

FP-EV-00-0008 - Technical Evaluation for the Acceptability of Removing Fire Damper 3HVR*DMPF-64 from the Fire Protection Program, Millstone Unit 3, addresses the inaccessibility of the damper for test purposes, and the acceptability of the duct penetration remaining unsealed in a fire.

ANALYSIS 46 – North Containment Recirculation Cooler Cubicle, Fire Area ESF-2, Zone N/A, Elevation (-)34 feet 9 inches through 36 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The engineered safety features building is located east of the containment structure and northeast of the hydrogen recombiner building. Fire Area ESF-2 involves containment recirculation pumps and coolers. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety Related

Containment Recirculation Pumps and Coolers

Radiation Monitors

Cables

Non Safety Related

Recirculation Cubicle Sump Pump

Containment Recirculation Sump Pumps

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose stations with 2.5 inch hose connections located in Fire Areas ESF-3 and 9 (Elevation 21 feet 6 inches).

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in all areas (elevations) where appreciable combustible loading is present.

Control room receives detection alarms/local alarms sound at Zone Panel Number 3B located in the fuel building (Elevation 11 feet 0 inches)

DESIGN FEATURES

Construction - Refer to Figures 77A, 77B, 77C, and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains provided in area.

COMBUSTIBLE LOADING

Floor Area - Elevation (-)34 feet 9 inches: 570 ft²

Elevation 4 feet 6 inches: Elevation 21 feet 6 inches: Elevation 36 feet 6 inches:

Combustible Material

Lube Oil ⁽¹⁾ - ⁽²⁾

Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low^(a)

(a) The Severity Classification is based upon using the floor area of the (-) 34 feet 9 inches elevation as all elevations indicated have grated floors.

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

< 80,000

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas

(1) Elevation (-) 34 feet 9 inches

(2) Elevation 36 feet 6 inches

ANALYSIS 47 – North Residual Heat Removal Heat Exchanger Cubicle, Fire Area ESF-3, Zone N/A, Elevation 4 feet 6 inches, 21 feet 6 inches, 36 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The engineered safety features building is located east of the containment structure, and northeast of the hydrogen recombiner building.

Fire Area ESF-3 involves a three-elevation cubicle housing the safety injection and quench spray pumps and associated equipment as well as components of a core residual heat removal system. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Residual Heat Removal Pump and Heat Exchanger

Safety Injection Pump

Safety Injection Pump Cooler

Safety Injection Pump Cooling Pump

Cables

Safety Related

Quench Spray Pump

Radiation Monitor

Cables

Non Safety Related

Residual Heat Removal Cubicle Sump Pump

Radiation Monitor

ESF Building Sump Pump

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose station with a 2.5 inch hose connection located in this area (Elevation 21 feet 6 inches) and ESF-7 (Elevation 38 feet 6 inches).

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in this area.

Control room receives detection alarms/local alarms sound at Zone Panel Number 3B located in the fuel building (Elevation 11 feet 0 inches).

DESIGN FEATURES

Construction - Refer to Figures 77A, 77B, and 77C for a physical description of this area. Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains provided in area.

COMBUSTIBLE LOADING

Floor Area - Elevation 4 feet 6 inches: 1,903 ft²

Elevation 21 feet 6 inches: $1,410 \text{ ft}^2$ Elevation 36 feet 6 inches: 591 ft^2

Combustible Material

Cable Insulation ⁽¹⁾ Cable Insulation ⁽²⁾ Clothing Cotton Pump Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

< 80,000

Low^(a)

(a) The Severity Classification is the average of the BTU/FT^2 of all elevations.

- (1) Elevation 4 feet 6 inches combustible
- (2) Elevation 21 feet 6 inches combustibles

POSTULATED FIRE

The postulated fire is a cable insulation or lubricating oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

ANALYSIS 48 – East Floor Area, Fire Area ESF-4, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The engineered safety features building is located east of the containment structure and northeast of the hydrogen recombiner building.

Fire Area ESF-4 involves a single-elevation cubicle used for cable routing. There is safe shutdown cable in this area.

MAJOR EQUIPMENT

Safe Shutdown

Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose stations with 2.5 inch hose connections located in Fire Areas ESF-3 and -5 (Elevation 21 feet 6 inches).

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in this area.

Control room receives detection alarms/local alarms sound at Zone Panel Number 3B located in the fuel building (Elevation 11 feet 0 inches).

DESIGN FEATURES

Construction - Refer to Figures 77A and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains provided in area.

COMBUSTIBLE LOADING

Floor Area - 980 ft²

Combustible Material

Cable Insulation

SEVERITY CLASSIFICATION

Low

FIRE LOADING VALUE (BTU/FT²)

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

ANALYSIS 49 – Southeast Floor Area/Auxiliary Feed Pump Cubicle, Fire Area ESF-5, Zone N/A, Elevation 4 feet 6 inches and 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The engineered safety features building is located east of the containment structure and northeast of the hydrogen recombiner building.

Fire Area ESF-5 involves a two-elevation cubicle accessible through the south wall door on elevation 24 feet 6 inches and through the north wall door on elevation 4 feet 6 inches. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Turbine Driven Steam Generator Auxiliary Feedwater Pump Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose station with a 2.5 inch hose connection located within this area (Elevation 21 feet 6 inches).

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection =- Single zone smoke detectors located in this area.

Control room receives detection alarms/local alarms sound at Zone Panel Number 3B located in the fuel building (Elevation 11 feet 0 inches).

DESIGN FEATURES

Construction - Refer to Figures 77A and 77B for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas with the exception of the Supplemental leak Collection Rate System (SLCRS) ductwork, which is not protected. The penetration of the barriers by the duct occurs at the unrated south wall and the rated ceiling of this area. Refer to Appendix B, Section C.5.a.(4) for further information.

Drainage - Floor drains provided in area.

COMBUSTIBLE LOADING

Floor Area - Elevation 4 feet 6 inches: 1,358 ft²

Elevation 21 feet 6 inches: 907 ft²

Combustible Material

Cable Insulation Lube Oil Transient Lube Oil Control Panels

SEVERITY CLASSIFICATIONFIRE LOADING VALUE (BTU/FT2)Low(a)< 80,000</td>

(a) The Severity Classification is the average of the BTU/FT^2 of all elevations.

POSTULATED FIRE

The postulated fire is a cable insulation or lubricating oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

86-10 EVALUATION

FP-EV-00-0008 - Technical Evaluation for the Acceptability of Removing Fire Damper 3HVR*DMPF-64 from the Fire Protection Program, Millstone Unit 3, addresses the inaccessibility of the damper for test purposes, and the acceptability of the duct penetration remaining unsealed in a fire.

ANALYSIS 50 – South Residual Heat Removal Heat Exchanger Cubicle, Fire Area ESF-6, Zone N/A, Elevation 4 feet 6 inches, 21 feet 6 inches, 36 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The engineered safety features building is located east of the containment structure, and northeast of the hydrogen recombiner building.

Fire Area ESF-6 involves a three elevation cubicle housing the safety injection and quench spray pumps and associated equipment as well as components of a core residual heat removal system. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Residual Heat Removal Pump and Heat Exchanger Safety Injection Pump

Safety Injection Pump Cooler

Safety Injection Pump Cooling Pump

Cables

Safety Related

Quench Spray Pump Radiation Monitor Cables

Non Safety Related

Residual Heat Removal Cubicle Sump Pump Radiation Monitor Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose stations with a 2.5 inch hose connection located in Fire Areas ESF-3 (Elevation 21 feet 6 inches) and ESF-7 (Elevation 38 feet 6 inches).

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in this area.

Control room receives detection alarms/local alarms sound at Zone Panel Number 3B located in the fuel building (Elevation 11 feet 0 inches).

DESIGN FEATURES

Construction - Refer to Figures 77A, 77B, and 77C for a physical description of this area. Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains provided in area.

COMBUSTIBLE LOADING

Floor Area - Elevation 4 feet 6 inches: 577 ft²

Elevation 21 feet 6 inches: 1,066 ft²

Elevation 36 feet 6 inches: 576 ft²

Combustible Material

Cable Insulation Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 6,500

Insignificant ^(a)

(a) The Severity Classification is the average of the BTU/FT^2 of all elevations.

POSTULATED FIRE

The postulated fire is a cable insulation or lubricating oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

ANALYSIS 51 – Refueling Water Recirculation Pumps Cubicle, Fire Area ESF-7, Zone N/A, Elevation 21 feet 6 inches and 36 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The engineered safety features building is located east of the containment structure and northeast of the hydrogen recombiner building.

Fire Area ESF-7 involves a two elevation cubicle housing pumps, electrical equipment, and building air conditioning equipment. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Motor Control Center

Cables

Safety Related

ESF Building Self-Contained Air Conditioning Unit Cables

Non Safety Related

Refuel Water Recirculating Pump

Motor Control Centers

ESF Building Fan

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

Automatic wet-pipe sprinklers with directional spray heads protect the fiberglass piping penetration to Fire Area ESF-9 (see Deviation in Licensing Letter B11658-Docket Number 50-423.

Water flow alarm and valve tamper signal transmit to the Control Room/Local alarms sound at the alarm check valve and Zone Panel ZP.9B located in the Auxiliary Building Elevation 24 feet 6 inches Column 52.3/F7. One-half inch hose stations with a 2.5 inch hose connection located in this area and Fire Area ESF-3.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in this area.

Control room receives detection alarms/local alarms sound at Zone Panel Number 3B located in the fuel building (Elevation 11 feet 0 inches).

DESIGN FEATURES

Construction - Refer to Figures 77B, 77C, and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas except for the fiberglass pipe penetrations to Fire Areas ESF-11 and ESF-9.

Drainage - Floor drains provided in area.

COMBUSTIBLE LOADING

Floor Area - Elevation 21 feet 6 inches: 536 ft²

Elevation 36 feet 6 inches: 981 ft²

Combustible Material

Cable Insulation 480 V MCC Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 80,000

Low^(a)

(a) The Severity Classification is the average of the BTU/FT^2 of all elevations.

POSTULATED FIRE

The postulated fire is a cable insulation or lubricating oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(1)(b) - Fiberglass Reinforced Plastic Pipe Used for Building Roof Drain System

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ANALYSIS 52 – North Motor-Driven Auxiliary Feed Pump Cubicle, Fire Area ESF-8, Zones N/A, Elevation 21 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The engineered safety features building is located east of the containment structure, and northeast of the hydrogen recombiner building.

Fire Area ESF-8 involves a single elevation cubicle housing one of two motor-driven steam generator auxiliary feedwater pumps. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Motor-Driven Steam Generator Auxiliary Feedwater Pump Cables

Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose station with a 2.5 inch hose connection located in fire area ESF-3 (Elevation 21 feet 6 inches).

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in this area.

Control room receives detection alarms/local alarms sound at Zone Panel Number 3B located in the fuel building (Elevation 11 feet 0 inches).

DESIGN FEATURES

Construction - Refer to Figures 77B and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains provided in area.

COMBUSTIBLE LOADING

Floor Area - 403 ft^2

Combustible Material

Cable Insulation Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderate

< 160,000

POSTULATED FIRE

The postulated fire is a cable insulation or lubricating oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

ANALYSIS 53 – South Motor-Driven Auxiliary Feed Pump Cubicle, Fire Area ESF-9, Zone N/A, Elevation 24 feet 6 inches and 36 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The engineered safety features building is located east of the containment structure and northeast of the hydrogen recombiner building.

Fire Area ESF-9 involves a two elevation cubicle housing one of two motor-driven steam generator feedwater pumps, electrical equipment, and ESF building air conditioning equipment. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Motor-Driven Steam Generator Auxiliary Feedwater Pump Cables Motor Control Center ESF Building Fans Cables

Safety Related

ESF Building Self Contained Air Conditioning Unit Radiation Monitors Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

Automatic wet-pipe sprinklers with directional spray heads protect the fiberglass piping penetration to Fire Area ESF-7 (see Deviation in Licensing Letter B11658-Docket Number 50-423).

Water flow alarm and valve tamper signal transmit to the Control Room/Local alarms sound at the alarm check valve and Zone Panel ZP-9B located in the Auxiliary Building Elevation 24 feet 6 inches at Column 52.3/F7. 1.5 inch hose stations with a 2.5 inch hose connection located in this area and Fire Area ESF-3 (Elevation 21 feet 6 inches).

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in this area.

Control room receives detection alarms/local alarms sound at Zone Panel Number 3 located in the fuel building (Elevation 11 feet 0 inches).

DESIGN FEATURES

Construction - Refer to Figures 77B and 77C for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas with the exception of the Supplemental Leak Collection Rate System (SLCRS) ductwork and the fiberglass pipe penetration to Fire Area ESF-7. The penetration of fire barriers by the duct occurs at the east wall and floor of this area. The SLCRS ductwork is enclosed in a one-hour fire-rated duct wrap. Refer to Appendix B, Section C.5.a.(4) for further information. The fiberglass piping penetration is protected by an automatic wet-pipe sprinkler system with directional spray heads.

Drainage - Floor drains provided in area.

COMBUSTIBLE LOADING

Floor Area - Elevation 21 feet 6 inches: 539 ft²

Elevation 36 feet 6 inches: 1,333 ft²

Combustible Material

Cable Insulation 480 V MCC Control Panel Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 80,000

Low^(a)

(a) The Severity Classification is the average of the BTU/FT^2 of both elevations.

POSTULATED FIRE

The postulated fire is a cable insulation or lubricating oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(1)(b) - Fiberglass Reinforced Plastic Pipe Used for Building Roof Drain System

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B1 1658, dated August 16, 1985-Docket Number 50-423).
ENGINEERED SAFETY FEATURES BUILDING

ANALYSIS 54 – North Air Conditioning Unit/Safety Injection Surge Tank Cubicle, Fire Area ESF-10, Zone N/A, Elevation 36 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The engineered safety features building is located east of the containment structure and northeast of the hydrogen recombiner building.

Fire Area ESF-10 involves a single elevation cubicle housing air conditioning equipment, safety injection system components, and an isolation pan elevation There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Safety Injection Pump Cooling Surge Tank Isolation Panel ESF Building Self-Contained Air Conditioning Unit Cables

Non Safety Related

ESF Building Fans

Cables

FIRE PROTECTION

Suppression - No fixed area suppression.

Automatic wet-pipe sprinkles with directional sprayer heads protect the fiberglass piping penetration to Fire Area ESF-11 (see Deviation in Licensing Letter B11658, Docket Number 50-423).

Water flow alarm and valve tamper signal transmit to the Control Room/Local alarms sound at the alarm check valve and Zone Panel ZP-9B located in the Auxiliary Building Elevation 24 feet 6 inches at Column 52.3/F7. 1.5 inch hose station with a 2.5 inch hose connection located in Fire Area ESF-7 (Elevation 38 feet 6 inches).

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

ENGINEERED SAFETY FEATURES BUILDING (CONT'D)

Detection - Single zone smoke detectors located in this area.

Control room receives detection alarms/local alarms sound at Zone Panel Number 3B located in the fuel building (Elevation 11 feet 0 inches).

DESIGN FEATURES

Construction - Refer to Figure 77C for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas except for the fiberglass pipe penetration to Fire Area ESF-11.

Drainage - Floor drains provided in area.

COMBUSTIBLE LOADING

Floor Area - 788 ft²

Combustible Material

480 V MCC Cable Insulation Control Panel Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 80,000

Low

POSTULATED FIRE

The postulated fire is a cable insulation or lubricating oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

ENGINEERED SAFETY FEATURES BUILDING (CONT'D)

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(1)(b) - Fiberglass Reinforced Plastic Pipe Used for Building Roof Drain System

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

ENGINEERED SAFETY FEATURES BUILDING

ANALYSIS 55 – South Air Conditioning Unit Cubicle, Fire Area ESF-11, Zone N/A, Elevation 36 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The engineered safety features building is located east of the containment structure and northeast of the hydrogen recombiner building.

Fire Area ESF-11 involves a single elevation cubicle housing ESF building air conditioning equipment and isolation panels. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

ESF Building Self-Contained Air Conditioning Unit

Isolation Panel

Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed area suppression.

Automatic wet-pipe sprinklers with directional spray heads protects the fiberglass piping penetration to Fire Area ESF-10 (see Deviation in Licensing Letter B11658, Docket Number 50-423).

Water flow alarm and valve tamper signal transmit to the Control Room/Local alarms sound at the alarm check valve and Zone Panel ZP-9B located in the Auxiliary Building Elevation 24 feet 6 inches at Column 52.3/F7. 1.5 inch hose station with a 2.5 inch hose connection located in Fire Area ESF-7 (Elevation 38 feet 6 inches).

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in this area.

Control room receives detection alarms/local alarms sound at Zone Panel Number 3B located in the fuel building (Elevation 11 feet 0 inches).

ENGINEERED SAFETY FEATURES BUILDING (CONT'D)

DESIGN FEATURES

Construction - Refer to Figure 77C for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas except for the fiberglass pipe penetration to Fire Area ESF-10.

Drainage - Floor drains provided in area.

COMBUSTIBLE LOADING

Floor Area - 441 ft²

Combustible Material

Cable Insulation Control Panel Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation or lubricating oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(1)(b) - Fiberglass Reinforced Plastic Pipe Used for Building Roof Drain System

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

FUEL BUILDING

ANALYSIS 56 – Floor Areas, Fire Area FB-1, Zone N/A, Elevation 11 feet 0 inches, 24 feet 6 inches, 34 feet 0 inches, 52 feet 4 inches

GENERAL FIRE AREA DESCRIPTION

The fuel building is located north of the engineered safety features building, south of the waste disposal building and east of the auxiliary building.

Fire Area FB-1 involves the open floor areas on the above noted elevations. Periodically, the area will be utilized to transfer spent fuel from the SFP to the ISFSI, using a Dry Storage Canister (DSC). Area FB-1 surrounds Area FB-2 at Elevation 11 feet 0 inches, 24 feet 6 inches, and 42 feet 6 inches There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety Related

Service Water Rad Monitor Microprocessor Fuel Transfer Tube Area Monitor Heat Tracing Transformer Fuel Building Transfer Canal Monitor Cables

Non Safety Related

Spent Fuel Shipping Cask Crane New Fuel Handling Crane New Fuel Receiving Crane Decontamination Area Crane Control Panels Motor Control Centers Fuel Pool Purification Pumps Cables Vacuum Drying Skid (VDS) VDS Booster Pump Cask Washdown Area Work Platform Winch Assembly Automatic Welding System (Periodically)

FUEL BUILDING (CONT'D)

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose stations (Elevation 11 feet 0 inches, 24 feet 6 inches, and 52 feet 4 inches).

2.5 inch hose connections at each hose station.

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in areas with appreciable combustible loading.

Control room receives all detection alarms/local alarms sound at Zone Panel Number 9B located in the auxiliary building Elevation 24 feet 6 inches.

DESIGN FEATURES

Construction - Refer to Figure 77B, 77C and 77D for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains on 11 feet and 24 feet 6 inch elevation only. All other areas drain through stairwells to Elevation 11 feet 0 inches and 24 feet 6 inches.

COMBUSTIBLE LOADING

Floor Area - Elevation 52 feet 4 inches: 7,859 ft²

Elevation 24 feet 6 inches: 4,636 ft² Elevation 11 feet 0 inches: 4,718 ft²

Combustible Material

Cable Insulation ⁽¹⁾ 480 V MCC ⁽¹⁾ Control Panels ⁽¹⁾ Plastic Hose ⁽¹⁾ Rubber Hose ⁽¹⁾ Plastic ⁽¹⁾ Cable Insulation ⁽²⁾

FUEL BUILDING (CONT'D)

Control Panels⁽²⁾ Lube Oil⁽²⁾ Cable Insulation⁽³⁾ Plastic Hose⁽²⁾

(1) Elevation 52 feet 4 inches

(2) Elevation 24 feet 6 inches

(3) Elevation 11 feet 0 inches

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 80,000

The Severity Classification is the average of the BTU/FT² off all elevations.

POSTULATED FIRE

Low^(a)

(a)

The postulated fire is a cable insulation fire resulting from a transient ignition source or an electrical fault in a motor or control cabinet, or the periodic use of an automatic welding system.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

I

FUEL BUILDING

ANALYSIS 57 – Fuel Pool Cooling Pumps and Coolers, Fire Area FB-2, Zone N/A, Elevation 11 feet 0 inches 24 feet 6 inches, 42 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The fuel building is located north of the engineered safety features building south of the waste disposal building and east of the auxiliary building.

Fire Area FB-2 involves the fuel pool cooling pump cubicle and sump (Elevation 24 feet and 11 feet 6 inches, respectively) and the fuel pool coolers (platform Elevation 42 feet 6 inches). There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety Related

Fuel Pool Cooling Pumps Fuel Pool Coolers Cables

Non Safety Related

Cables

FIRE PROTECTION

Suppression - No fixed suppression.

1.5 inch hose stations available in adjacent fire area FB-1 on the 11 feet and 24 feet 6 inches elevations.

2.5 inch hose connections available at the 1.5 inch hose stations noted above.

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Single zone smoke detectors located in areas with appreciable combustible loading.

Control room receives all detection alarms/local alarms sound at Zone Panel Number 9B located in the auxiliary building Elevation 24 feet 6 inches.

FUEL BUILDING (CONT'D)

DESIGN FEATURES

Construction - Refer to Figures 77A, 77B, and 77C for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains on Elevation 11 feet and 24 feet 6 inches. Open grating on Elevation 42 feet 6 inches provides drainage to Elevation 24 feet 6 inches.

COMBUSTIBLE LOADING

Floor Area - 648 ft²

Combustible Material

Cable Insulation Lube Oils Transient Lube Oils Plastic Rubber Control Panels

SEVERITY CLASSIFICATION

<u>FIRE LOADING VALUE</u> (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or an electrical fault in a motor or control cabinet.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

I

HYDROGEN RECOMBINER BUILDING

ANALYSIS 58 – Floor Area, Fire Area HR-1, Zone N/A, Elevation 24 feet 6 inches and 37 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The hydrogen recombiner building is located adjacent to the containment structure at the southwest corner of the engineered safety features building.

Fire Area HR-1 involves the entire recombiner facility. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safety-Related

Hydrogen Recombiners and Control Panels

Radiation Monitors

Cables

Non Safety-Related

Cables

FIRE PROTECTION

Suppression	-	No fixed suppression systems.
		1.5 inch and 2.5 inch hose lines available from yard hydrant and hose house located approximately 80 feet south of the building.
		Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	Single zone smoke detectors located in areas with appreciable combustible load.
		Control room receives detection alarms/local alarms sound at Zone Panel Number 3B located in the fuel building (Elevation 11 feet 0 inches).

DESIGN FEATURES

Construction - Refer to Figures 77B and 77C for a physical description of this area. Three hour fire rated construction provided between adjacent fire areas.

HYDROGEN RECOMBINER BUILDING (CONT'D)

Drainage - Manual, normally closed floor drains provided; hydrogen recombiner cubicles and sample room Elevation 24 feet 6 inches

COMBUSTIBLE LOADING

Floor Area - Elevation 24 feet 6 inches: $1,305 \text{ ft}^2$

Elevation 37 feet 6 inches: 703 ft²

Combustible Material Control Panels* Lube Oil* Transient Lube Oil* Lube Oil** Transient Lube Oil** Rubber

* Elevation 24 feet 6 inches

** Elevation 37 feet 6 inches

SEVERITY CLASSIFICATION

Insignificant

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 6,500

POSTULATED FIRE

The postulated fire is a cable insulation fire or a fire in any single motor resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.6.c.(4) - Hose Stations

A deviation request has been submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11769, dated October 7, 1985 - Docket Number 50-423).

ANALYSIS 59A – Crane Bay/Welding Shop/Mech. Work Area, Fire Area MS-1, Zone A, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The machine shop is located adjacent to the north wall of the service building. Zone MS-1A involves the crane bay, welding shop, and mechanical work area. Outdoor combustible material storage areas/enclosures located both east, west and north of Zone MS-1A. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related Overhead Crane Welding Equipment

Arc Cutting Equipment

FIRE PROTECTION

Suppression	_	Ceiling level wet-pipe automatic sprinkler system protects the entire zone.
		Water flow alarms and valve tamper supervision provided with signals to control room and Zone Panel Number 8C located in the service building west corridor (Elevation 4 feet 6 inches).
		1.5 inch hose station with 2.5 inch hose connection located in area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	None.

DESIGN FEATURES

Construction - Refer to Figures 77B and 77F for a physical description of this area. South Wall - Solid 8 inch concrete block forms the portion of the wall which separates the Welding and Crane Bay from the Oil and Grease Room (three hour rated); Hollow 8 inch concrete block separates the Welding Shop from the Electrical Shop, and the Mechanical Work Area from the Maintenance Supervisors Office and Electrical Shop (two hour rated).

East & West Walls - Metal Siding with steel cross-bracing.

Ceiling - Open framing (two stories high)

- Note: Within the Crane Bay floor is a closed 6 feet by 6 feet by 15 feet deep pit, designed for pump repairs. The pit is provided with composite concrete and steel cap covers.
- Drainage Floor drains provided.

COMBUSTIBLE LOADING

Floor Area - $5,105 \text{ ft}^2$

Combustible Material

Cable Insulation

Flammable Liquid

Transient Lube Oil

Lube Oil

Paper

Plastic

Rubber

Wood

SEVERITY CLASSIFICATION

Insignificant

FIRE LOADING VALUE (BTU/FT²)

< 6,500

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

ANALYSIS 59B – Oil and Grease Room, Fire Area MS-1, Zone B, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The machine shop is located adjacent to the north wall of the service building. Zone MS-1B, oil and grease room, is centrally located within Fire Area MS-1 below the new mezzanine maintenance office which is located on Elevation 35 feet 0 inches. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

None.

FIRE PROTECTION

Suppression-An automatic wet-pipe sprinkler system extends from the machine
shop system.Water flow alarms and valve tamper supervision provided with
signals to control room and Zone Panel Number 8C located in the
service building west corridor (Elevation 4 feet 6 inches).1.5 inch hose station with 2.5 inch hose connection located in area.
Portable extinguishers provided based on NFPA Standard Number
10 location and spacing guidelines.Detection-None.

DESIGN FEATURES

Construction	-	Refer to Figures 77B and 77F for a physical description of this area.
		Walls are 8 in. solid concrete block construction (three hour rated); Ceiling is constructed of steel decking with reinforced concrete slab (three hour rated); Support beams are protected with gypsum wallboard (three hour rated); 6 inches concrete curb around entrance to area.
		Door/Frame - Double swing Class A door assembly - three hour rated.
Drainage	-	Plugged Floor drains.

COMBUSTIBLE LOADING

Floor Area - 386 ft² <u>Combustible Material</u> Lube Oil Cleaning Fluid Flammable Liquid

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Severe

240,000 or above

POSTULATED FIRE

The postulated fire is lubricating oil, hydraulic oil, or cleaning fluid fire resulting from an accident or a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

ANALYSIS 59C – Electrical Shop Area, Fire Area MS-1, Zone C, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The machine shop is located adjacent to the north wall of the service building. Zone MS-1C, electrical shop area, is centrally located within Fire Area MS-1. The area includes the assistant electrical maintenance supervisor's office, work shop, and electricians' office cubicles. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Office Equipment

Electrical Testing Equipment

FIRE PROTECTION

Suppression	-	Ceiling level automatic wet-pipe sprinkler system provides complete coverage for the area.
		Water flow alarms and valve tamper supervision provided with signals to control room and Zone Panel Number 8C located in the service building west corridor (Elevation 4 feet 6 inches).
		1.5 inch hose station with 2.5 inch hose connection located in area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	None.

DESIGN FEATURES

- Construction Refer to Figures 77B and 77F for a physical description of this area. North wall is hollow 8 inch concrete block (two hour rated) except at the Oil & Grease Room where it is Solid 8 inch concrete block (three hour rated); South and East walls are hollow 8 inch concrete block (two hour rated); West wall is Metal Siding; Ceiling is metal decking with reinforced concrete (three hour rated).
- Drainage None.

COMBUSTIBLE LOADING

Floor Area - 1,177 ft² <u>Combustible Material</u> Flammable Light Plastic Wood Paper

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

5-165

MACHINE SHOP

ANALYSIS 59D – Maintenance Office, Fire Area MS-1, Zone D, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The machine shop is located adjacent to the north wall of the service building. Zone MS-1D is located in the southeast section of the area. The zone involves the mechanical assistance maintenance supervisor offices. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety Related

Office Equipment

FIRE PROTECTION

Suppression	-	An automatic wet-pipe sprinkler system provides complete coverage for the area.
		Water flow alarms and valve tamper supervision provided with signals to control room and Zone Panel Number 8C located in the service building west corridor (Elevation 4 feet 6 inch).
		1.5 inch hose station with 2.5 inch hose connection located in area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	None.

DESIGN FEATURES

Construction	-	Refer to Figures 77B and 77F for a physical description of this area.
		South Wall - Combination 8 inch concrete block (portion of office adjacent to Machine Shop) and metal siding with steel cross bracing (portion of office adjacent to yard); East wall constructed of metal siding with steel cross bracing; North wall constructed of hollow 8 in. concrete block two hour rated); West wall constructed of hollow 8 inch concrete block with glass panels (non-rated); Ceiling consists of concrete slab with fire retardant ceiling panels.
Drainage	-	None.

COMBUSTIBLE LOADING

Floor Area - 896 ft^2

Combustible Material

Paper

SEVERITY CLASSIFICATION Low

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 80,000

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

ANALYSIS 59E – Tool Room, Fire Area MS-1, Zone E, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The machine shop is located adjacent to the north wall of the service building. Zone MS-1E involves the tool room located in the southwest section of the fire area. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related Flammable Storage Cabinet Drawer Cabinet Open Rack Storage

FIRE PROTECTION

Suppression	-	Ceiling level wet-pipe automatic sprinkler system provides complete coverage for the area.
		Water flow alarms and valve tamper supervision provided with signals to control room and Zone Panel Number 8C located in the service building west corridor (Elevation 4 feet 6 inches).
		1.5 inch hose station with 2.5 inch hose connection located in area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	None.

DESIGN FEATURES

Construction	-	Refer to Figures 77B and 77F for a physical description of this area.
		Walls are hollow 8 inch concrete block construction (two hour rated); Ceiling is metal decking with reinforced concrete (three hour rated).
Drainage	-	None.

COMBUSTIBLE LOADING

Floor Area - 2,017 ft² <u>Combustible Material</u> Cardboard Flammable Liquid Plastic Rubber Wood

SEVERITY CLASSIFICATION

Low

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 80,000

POSTULATED FIRE

The postulated fire is the ignition of stored combustible materials by a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

ANALYSIS 59F – Machinery Area/Hallway, Fire Area MS-1, Zone F, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The machine shop is located adjacent to the north wall of the service building. Zone MS-1F involves the machinery area and hallway located in the southern section of the maintenance shop. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related Five Ton Overhead Crane Vertical Milling Machines Horizontal Lathes Band Saws

FIRE PROTECTION

Suppression	-	Ceiling level automatic wet-pipe sprinkler system provides complete coverage for the area.
		Water flow alarms and valve tamper supervision provided with signals to control room and Zone Panel Number 8C located in the service building west corridor (Elevation 4 feet 6 inches).
		1.5 inch hose station with 2.5 inch hose connection located in area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	None.

DESIGN FEATURES

Construction	-	Refer to Figures 77B and 77F for a physical description of this area.
		North Wall - Hollow 8 inch block wall (two hour rated) abutting the Maintenance Supervisors Office and Tool Room, with open hallway into Zone MS-1A; South Wall - Hollow 8 inch block wall (two hour rated); East and West Walls - Metal siding with steel cross-bracing; Ceiling - Two Story open framing.
Drainage	-	Floor drains provided throughout the area.

COMBUSTIBLE LOADING

Floor Area - 3,403 ft² <u>Combustible Material</u> Cardboard Flammable Liquid Office Materials Wood Lube Oil Rags Plastic

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Insignificant

< 6.500

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

ANALYSIS 59G – QA Meter Storage Room, Fire Area MS-1, Zone G, Elevation 2 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The machine shop is located adjacent to the north wall of the service building. Zone MS-1G involves the high-current testing room located at the south end of the machine shop. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Test Equipment (Meters)

FIRE PROTECTION

Suppression	-	No fixed suppression.
		1.5 inch hose station with 2.5 inch hose connection located in area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	None.

DESIGN FEATURES

- Construction Refer to Figures 77B and 77F for a physical description of this area. Walls are hollow 8 inch concrete block, except at the west wall which is a combination of hollow 8 inch concrete block and sheet rock (all two hour rated); Ceiling consists of a concrete slab with fire retardant ceiling panels.
- Drainage None.

COMBUSTIBLE LOADING

Floor Area - 213 ft^2

Combustible Material Cardboard Paper Plastic

Cable Insulation

SEVERITY CLASSIFICATION Low

FIRE LOADING VALUE (BTU/FT²) < 80,000

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

ANALYSIS 59H – Maintenance Offices, Fire Area MS-1, Zone H, Elevation 35 feet 0 inches

GENERAL FIRE AREA DESCRIPTION

The machine shop is located adjacent to the north wall of the service building. Zone MS-1H involves the second floor maintenance offices located above the first floor maintenance office and tool room. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related General Office Equipment Computers and Printers

FIRE PROTECTION

Suppression	-	Ceiling level automatic wet-pipe sprinkler system provided throughout the area.
		Water flow alarms and valve tamper supervision provided with signals to control room and Zone Panel Number 8C located in the service building west corridor (Elevation 4 feet 6 inches).
		1.5 inch hose station with 2.5 inch hose connection located in area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	None.

DESIGN FEATURES

Construction - Refer to Figures 77B and 77F for a physical description of this area.
North Wall - North perimeter wall overlooking the mechanical work area is constructed at 3 5/8 inch metal studs with two layers of 5/8 inch gypsum board (two hour rated). The remaining part of the north wall is constructed of 3 5/8 inch metal studs with one layer of one-half inch gypsum board (non-rated). South, East and West Walls - Constructed of 3 5/8 inch metal studs with two layers of 5/8 inch gypsum board (two hour rated).

Ceiling - Constructed of suspended drop out ceiling with fire retardant ceiling tiles from metal decking with built-up roofing material.

Floor - Constructed of metal decking with 6 inch reinforced concrete (three hour rated).

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - 3,663 ft² <u>Combustible Material</u> Paper Plastic

Wood

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

ANALYSIS 59I – Meeting Room and Lunch Area, Fire Area MS-1, Zone I, Elevation 35 feet 0 inches

GENERAL FIRE AREA DESCRIPTION

The machine shop is located adjacent to the north wall of the service building. Zone MS-1I involves the second floor meeting room and lunch area located above the oil and grease room and electrical shop. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related Electric Range Refrigerator Range Hood

FIRE PROTECTION

Suppression	-	Ceiling level automatic wet-pipe sprinkler system provided throughout out area.
		Water flow alarms and valve tamper supervision provided with signals to control room and Zone Panel Number 8C located in the service building west corridor (Elevation 4 feet 6 inches).
		1.5 inch hose station with 2.5 inch hose connection located in area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	None.

DESIGN FEATURES

Construction	-	Refer to Figures 77B and 77F for a physical description of this area.
		North, East and West Walls - constructed of 3 5/8 inch metal studs with two layers of 5/8 inch gypsum board (2 hour rated), except at the lunch preparation area west wall bordering the Mechanical Equipment room, which is constructed of 3 5/8 inch metal studs with one layer of 1/2 inch gypsum board (non-rated).
		South Wall - constructed of 3 5/8 inch metal studs with one layer of one-half inch gypsum board (non-rated).

Floor - constructed of metal decking with 6 in. reinforced concrete (three hour rated).

Ceiling - constructed of suspended drop-out ceiling with fire retardant ceiling tiles from metal decking with built-up roofing material.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - 2,056 ft² <u>Combustible Material</u> Cardboard Plastic Wood

SEVERITY CLASSIFICATION Insignificant

FIRE LOADING VALUE (BTU/FT²)

< 6,500

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

ANALYSIS 60 – Deleted

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MAIN STEAM VALVE ENCLOSURE

ANALYSIS 61 – Floor Areas, Fire Area MSV-1, Zone N/A, Elevation 24 feet 6 inches through 70 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The main steam valve enclosure is located adjacent to the west side of the containment structure and east of the turbine building.

Fire Area MSV-1 involves the entire enclosure with multiple open steel grated elevations. There are safe shutdown equipment and cables in this area.

MAJOR EQUIPMENT

Safe Shutdown

Main Steam Safety Valves Main Steam Isolation Trip and Bypass Valves Main Steam Isolation Trip and Bypass Valves

Safety-Related

Radiation Monitors

Feedwater Flow Control Valves

Feedwater Low Flow Control Valves

Feedwater Isolation Trip Valves

Feedwater Isolation Valve Bonnet Relief

Non Safety-Related

Steam Generator Atmospheric Relief Valve Silencer

FIRE PROTECTION

Suppression - No fixed suppression.

Manual hose streams available from yard hydrant and hose house located approximately 80 feet south of the enclosure and from HR-60 located in Fire Area AB-8.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

MAIN STEAM VALVE ENCLOSURE (CONT'D)

Detection - Fixed temperature heat detection alarms transmit to the control room. Local alarm sounds at Zone Panel 1B located in the auxiliary building, Elevation 52 feet 0 inches.

DESIGN FEATURES

Construction - Refer to Figures 77B, 77C, 77D, 77E, and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Floor drains on Elevation 24 feet 6 inches and 41 feet 0 inches.

COMBUSTIBLE LOADING

Floor Area - Elevation 24 feet 6 inches: 1,562 ft²

Elevation 41 feet 0 inches: 3,560 ft²

Elevation 70 feet 6 inches 2,534 ft²

Combustible Material

Transient Lube Oil * Lube Oil * Plastic * Rubber * Clothing (Cotton)* Cable Insulation ** Transient Lube Oil ** Lube Oil ** Rubber ** Transient Lube Oil *** Lube Oil *** Plastic Hose ***

* Elevation 24 feet 6 inches

** Elevation 41 feet 0 inches

*** Elevation 70 feet 6 inches

MAIN STEAM VALVE ENCLOSURE (CONT'D)

SEVERITY CLASSIFICATION

Low *

FIRE LOADING VALUE (BTU/FT²)

< 80,000

* The Severity Classification is the average of the BTU/FT^2 of all elevations.

POSTULATED FIRE

The postulated fire is a hydraulic oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.6.a.(1) - No Smoke Detection

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.6.c.(4) - Hose Stations

A deviation request has been submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11769, dated October 7, 1985 - Docket Number 50-423).

SERVICE BUILDING

ANALYSIS 62 – Normal Switchgear Room, Fire Area SB-1, Zone N/A, Elevation 4 feet 6inches

GENERAL FIRE AREA DESCRIPTION

The service building is located north of the turbine building, east of the control building and west of the auxiliary building.

Fire Area SB-1 involves the entire elevation 4 feet 6inches of the service building. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related 6.9 kV Normal Switchgear 480 V Normal Unit Substations 480 V MCC Cables 480V Uninterruptible Power Supply (UPS)

FIRE PROTECTION

Suppression	-	Manually actuated total flooding CO ₂ suppression system.
		1.5 inch hose stations available in area and service building Elevation 24 feet 6 inches.
		2.5 inch hose connections available in area and service building Elevation 24 feet 6 inches.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	Cross-zoned smoke detection arranged to transmit alarm.
		CO_2 suppression system is in manual mode. Detection circuits arranged to transmit a signal to the control room, to the local Zone Panel Number 8C located in the service building west corridor (elevation 4 feet 6 inches), and to the Chemetron local control panel located in the service building east corridor (elevation 24 feet 6 inches).
DESIGN FEATURES

Construction - Refer to Figures 77A and 77F for a physical description of this area. Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - 6,050 ft² <u>Combustible Material</u> Cable Insulation 4160 V Switchgear 480 V Load Center 480 V MCC Batteries

SEVERITY CLASSIFICATION

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 80,000

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

SERVICE BUILDING

ANALYSIS 63 – North Cable Tunnel, Fire Area SB-2, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The service building is located north of the turbine building, east of the control building, and west of the auxiliary building.

Fire Area SB-2 involves the cable tunnel in the service building (Elevation 4 feet 6 inches) connecting the east switchgear room in the control building (Fire Area CB-2) and the east MCC and rod drive area in the auxiliary building (Fire Area AB-5). This area is located south of Fire Area SB-1 (normal switchgear room) and north of Fire Area SB-3 (south cable tunnel). There is safe shutdown cable in this area.

MAJOR EQUIPMENT

Safe Shutdown Cables Safety-Related Cables Non Safety-Related Cables

FIRE PROTECTION

Suppression - Manual actuation total flooding CO₂ suppression system. CO₂ can be actuated at the local Chemetron CO₂ control panel located in the Service Building, East Corridor, elevation 24 feet 6 inches.
1.5 inch hose stations available in the elevation 4 feet 6 inches Service Building West Corridor and at Auxiliary Building, elevation 24 feet 6 inches (Fire Area AB-5).

		Note: Manual firefighting efforts will require the extension of a hose from the Auxiliary Building East Floor Area elevation 24 feet 6 inches Connection will be made to the dry hose reel located in the East MCC Rod and Control Area, elevation 24 feet 6 inches The connected hose lengths will then be extended to the North Cable Tunnel and charged at the hose station located in the Auxiliary Building East Floor Area, elevation 24 feet 6 inches Entrance to the hose stations in the Service Building West Corridor is not easily accessible as a result of the tornado doors in the area. Security assistance will be required to gain access through the tornado doors.
		2.5 inch hose connections available in the elevation 4 feet 6 inches Service Building West Corridor.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	Cross-zoned, smoke detection is located in this area.
		Detection circuits are arranged to transmit a signal to the local Zone Panel Number 8C located in the service building west corridor (Elevation 4 feet 6 inches), to the Chemetron local control panel located in the service building east corridor (Elevation 24 feet 6 inches) and to the control room.
DESIGN FEATURES		
Construction	-	Refer to Figure 77A for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - $1,079 \text{ ft}^2$

Combustible Material

Cable Insulation

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Severe

240,000 or above

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.6.c.(4) - Hose Stations

A deviation request has been submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11769, dated October 7, 1985 - Docket Number 50-423).

SERVICE BUILDING

ANALYSIS 64 – South Cable Tunnel, Fire Area SB-3, Zone N/A, Elevation 4 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The service building is located north of the turbine building, east of the control building, and west of the auxiliary building.

Fire Area SB-3 involves the cable tunnel in the service building (Elevation 4 feet 6 inches) connecting the west switchgear room in the control building (Fire Area CB-1) and the West MCC and Rod Drive Area in the auxiliary building (Fire Area AB-6A). This area is located south of Fire Area SB-1 (normal switchgear room) and Fire Area SB-2 (north cable tunnel). There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown Cables Safety-Related Cables Non Safety-Related Cables

FIRE PROTECTION

Suppression - Manual actuation total flooding CO₂ suppression system. CO₂ can be actuated at the local Chemetron CO₂ control panel located in the Service Building, East Corridor, Elevation 24 feet 6 inches.
1.5 inch hose stations available in the control building Fire Area CB-1 and in the Auxiliary Building Elevation 24 feet 6 inches (Fire Area AB-6, Zone A).

	Note: A dry standpipe is provided in the Control Building OS&Y control valves must be manually opened to provide water to the standpipe system. Control Valves are located in the Turbine Building northwest corner and in the Service Building west corridor adjacent to the Cable Spreading Room. Additional dry hose reel is provided in the West MCC and Rod Control area, elevation 24 feet 6 inches. Manual fire fighting efforts will require the extension of hose from the yard hydrant and hose house located approximately 80 feet south of the Main Steam Valve Building, requiring approximately 150 foot length of hose from the hydrant to the hose reel in the West MCC and Rod Control area.
	2.5 inch hose connections available in control building Fire Area CB-1 (Elevation 4 feet 6 inches)
	Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection -	Cross-zoned smoke detection is located in this area.
	Detection circuits are arranged to transmit a signal to the local Zone Panel Number 8C located in the service building west corridor (Elevation 4 feet 6 inches), to the Chemetron local control panel located in the service building east corridor (Elevation 24 feet 6 inches), and to the control room.
DESIGN FEATURES	
Construction	- Refer to Figure 77A for a physical description of this area.
	Three hour fire rated construction provided between adjacent fire

areas. Drainage - None.

COMBUSTIBLE LOADING

Floor Area - $1,072 \text{ ft}^2$

Combustible Material

Cable Insulation

5-188

SERVICE BUILDING (CONT'D)

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Severe

240,000 or above

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(14) - Floor Drains

A deviation request has been submitted and transmitted to the NRC (W.G. Counsil to B.J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423).

BTP CMEB 9.5-1 Section C.6.c.(4) - Hose Stations

A deviation request has been submitted and transmitted to the NRC (J.F. Opeka to B.J. Youngblood, Letter B11769, dated October 7, 1985 - Docket Number 50-423).

SERVICE BUILDING

ANALYSIS 65 – Floor Area, Fire Area SB-4, Zone A, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The service building is located north of the turbine building, east of the control building, and west of the auxiliary building.

Fire Area SB-4 involves all service building floors above Elevation 4 feet 6 inches Zone A involves the entire floor area of the elevation 24 feet 6 inches in the service building and the vertical ventilation ductwork up to the 52 feet 6 inches floor elevation. The area houses radiation protection offices, RCA access point, laboratories, and locker room facilities. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Nonsafety-Related

Laboratory Equipment

Furniture (Office and Lab)

Chemetron CO₂ Control Panels

Cables

FIRE PROTECTION

-	No fixed suppression.		
	1.5 inch hose stations and 2.5 inch hose connections provided in the area.		
	Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.		
-	Single zone smoke detection provided in areas where applicable combustible loading exists.		
	Control room receives detection alarms/local alarms transmit to Zone Panel Number 8C located in the service building - west corridor (Elevation 4 feet 6 inches).		
	-		

DESIGN FEATURES

Construction - Refer to Figures 77B and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas with two exceptions:

1. North wall abutting machine shop (Fire Area MS-1 Zone F) machinery area/hallway area which is two hour fire rated construction, and

2. South wall in the area of the door leading to the turbine building (Fire Zone TB-2A) which is two hour fire-rated construction.

Drainage - Shower rooms, chemistry lab, and count room only.

COMBUSTIBLE LOADING

Floor Area -7.657 ft^2

Combustible Material

Paper	Wood	Plastic
Clothing (cotton)	Control Panels	Rubber

SEVERITY CLASSIFICATION Low FIRE LOADING VALUE (BTU/FT²) < 80,000

POSTULATED FIRE

The postulated fire is ignition of materials by a transient source of a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

SERVICE BUILDING

ANALYSIS 66 – Floor Area, Fire Area SB-4, Zone B, Elevation 38 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The service building is located north of the turbine building, east of the control building, and west of the auxiliary building.

Fire Area SB-4 involves all service building floors above elevation 4 feet 6 inches Zone B involves the entire floor area of elevation 38 feet 6 inches, with the exception of the lunch room area. The area houses instrument repair shop, engineering offices, and washroom/shower room areas. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Cables

FIRE PROTECTION

Suppression -		No fixed suppression.
		1.5 inch hose stations and 2.5 inch hose connections provided in the area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	Single zone smoke detection provided in areas where applicable combustible loading exists.
		Control room receives detection alarms/local alarms transmit to Zone Panel Number 8C located in the service building - west corridor (Elevation 4 feet 6 inches).

DESIGN FEATURES

- Construction Refer to Figures 77C and 77F for a physical description of this area. Three hour fire rated construction provided between adjacent fire areas, with one exception: The north wall abutting the machine shop machinery area/hallway (Fire Area MS-1, Zone F) which is two hour rated construction.
- Drainage Washrooms and shower rooms only.

COMBUSTIBLE LOADING

Floor Area - 6,120 ft² <u>Combustible Material</u> Cable Insulation Wood Paper Acetone Clothing (cotton)

SEVERITY CLASSIFICATION

Low

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 80.000

POSTULATED FIRE

The postulated fire is ignition of materials by a transient source or a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

SERVICE BUILDING

ANALYSIS 67 – Floor Area, Fire Area SB-4, Zone C, Elevation 49 feet 6 inches and 52 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The service building is located north of the turbine building, east of the control building and west of the auxiliary building.

Fire Area SB-4 involves all service building floors above Elevation 4 feet 6 inches Zone C involves the entire floor area of Elevation 49 feet 6 inches and Elevation 52 feet 6 inches There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

HVAC Equipment

Cables

FIRE PROTECTION

Suppression -		No fixed suppression.
		1.5 inch hose stations and 2.5 inch hose connections provided in the area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection -	-	Single zone smoke detection provided in the mechanical equipment area.
		No detection in office areas.
		Control room receives detection alarms/local alarms transmit to Zone Panel Number 8C located in the service building-west corridor (Elevation 4 feet 6 inches).

DESIGN FEATURES

Construction - Refer to Figures 77D and 77F for a physical description of this area, with two exceptions: An 8 inch diameter fiberglass pipe and a partially sealed beam pocket in the south wall separating Fire Area SB-4, Zone C from Fire Area TB-2, Zone C.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Provided throughout SB-4C.

COMBUSTIBLE LOADING

Floor Area - $7,947 \text{ ft}^2$

Combustible Material

Cable Insulation

480 V MCC

Paper

<u>SEVERITY CLASSIFICATION</u> <u>FIRE LOADING VALUE</u> (BTU/FT²) Low < 80,000

POSTULATED FIRE

The postulated fire is ignition of materials by a transient source or cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

BTP CMEB 9.5-1 Section C.5.a.(11) - Concealed Spaces

A deviation request has been submitted and transmitted to the NRC (E.J. Mroczka to B.J. Youngblood, Letter B11669, dated August 29, 1985 - Docket Number 50-423).

Engineering Evaluation

Fire Protection Engineering Evaluation Number 174, "Service Building Mechanical Equipment Room (elevation 52 feet 6 inches) South Wall," addresses the partially sealed beam pocket in the north wall separating Fire Area SB-4, Zone C from Fire Area TB-2, Zone C.

SERVICE BUILDING

ANALYSIS 68 – I&C Conference Room, Office and Lunch Area, Fire Area SB-4, Zone D, Elevation 38 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The service building is located north of the turbine building, east of the control building and west of the auxiliary building.

Fire Area SB-4 involves all service building floors above elevation 4 feet 6 inches Zone D involves the lunch room and kitchen area in the northeast corner of the elevation 38 feet 6 inches floor area. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Electronic Data Processing Equipment

QA and Meteorology Equipment

Office Product

Cables

FIRE PROTECTION

Suppression -		No fixed suppression in lunchroom.
		1.5 inch hose stations and 2.5 inch hose connections provided in the area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection -	-	Single zone smoke detection provided in areas where appreciable combustible loading exists.
		Control room receives detection alarms/local alarms transmit to Zone Panel Number 8C located in the service building - west corridor elevation 4 feet 6 inches

DESIGN FEATURES

Construction	-	Refer to Figures 77C and 77F for a physical description of this area.
Drainage	-	None.

COMBUSTIBLE LOADING

Floor Area - 1,424 ft² <u>Combustible Material</u> Wood Paper Clothing (cotton) Plastic

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is ignition of materials by a transient source.

CONSEQUENCES OF POSTULATED FIRE

TECHNICAL SUPPORT CENTER

ANALYSIS 69 – Fire Area TS-1, Zone N/A, Elevation 13 feet 6 inches and 26 feet 8 inches

GENERAL FIRE AREA DESCRIPTION

The technical support center is located adjacent to the west wall of the control building.

Fire Area TS-1 involves a two story enclosure which is used as an office/service area in support of supplemental control room activities. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Air Conditioner Unit (fan coil section only)

Charcoal Filtration Unit

Motor Control Center

FIRE PROTECTION

Suppression -		No fixed suppression systems for general area.
		1.5 inch hose station with a 2.5 inch hose connection provided in this area.
		Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
		1.5 inch connection and manually operated water spray system provided for the filtration unit charcoal section.
Detection	-	Single zone smoke detection provided.
		Control room receives alarms/local alarms sound at Zone Panel Number ZP-5C located in the control building west wall (Elevation 24 feet 6 inches).
		Heat detection system provided for the charcoal filtration unit.

TECHNICAL SUPPORT CENTER (CONT'D)

DESIGN FEATURES

Construction -		Refer to Figures 77A, 77B, and 77F for a physical description of this area.
		Three hour fire rated construction provided between adjacent fire areas.
Drainage	-	No floor drains.
		Charcoal filtration unit housing withstands 24 inch water depth to contain deluge spray water.

COMBUSTIBLE LOADING

Floor Area	-	Elevation 26 feet 8 inches: 1,387 ft ²
		Elevation 13 feet 6 inches: 1,941 ft ²
Combustible M	lateri	ial
480 V MCC		
Charcoal		
Transient Char	coal	
Paper *		
Wood		
Rubber		
Styrofoam		
Plastic *		

* Denotes Elevation 13 ft-6 in. combustibles (on this level only).

SEVERITY CLASSIFICATION	FIRE LOADING VALUE (BTU/FT ²)
- ·	0.0.00

Low *

< 80,000

*The Severity Classification is the average of the BTU/FT^2 of all elevations.

POSTULATED FIRE

Filtration Unit - The postulated fire is a contained fire resulting from a combustible ignition source (charcoal) within the filtration unit.

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TECHNICAL SUPPORT CENTER (CONT'D)

Technical Support Center excluding Filtration Unit - The postulated fire is a minor cable insulation fire or electrical cabinet fire resulting from a transient ignition source or an electrical fault.

CONSEQUENCES OF POSTULATED FIRE

TRANSFORMERS

ANALYSIS 70 – North Normal Station Service Transformer Fire Area XR-1, Zone N/A, Elevation Ground Level

GENERAL FIRE AREA DESCRIPTION

The north normal station service transformer is located approximately 75 feet east of the auxiliary boiler building, 75 feet southeast of the turbine building, and 150 feet south of the containment structure. This unit is adjacent to the south normal station service transformer and both Spare Normal Station Service Transformers. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Normal Station Transformer

Cables

FIRE PROTECTION

Suppression	-	Automatic operating deluge water spray system/Line-Type heat detection system actuates suppression system.
		Manual actuation capability via a pull station at the control panel located adjacent to the transformer area and from the deluge valve located in the valve pit.
		Detection alarm, water flow alarm, and valve tamper signal transmit to the local deluge control panel, Zone Panel Number 12 located in the Deluge Building and to the control room main fire protection panel.
		Manual hose streams available from yard hose houses and hydrants.
Detection	-	Line-type heat detection system provided as described above for suppression system actuation.
DESIGN FEATURES		

Construction	-	Refer to Figure 77B for a physical description of this area.
		Fire barrier wall used to separate adjacent transformers.
Drainage	-	Drains to oil separation system; diked area with trap rock cover utilized for spilled oil retention and spill fire control.

TRANSFORMERS (CONT'D)

COMBUSTIBLE LOADING

Floor Area - 3618 ft² Combustible Material Transformer Oil

SEVERITY CLASSIFICATION

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 160,000

Moderate

POSTULATED FIRE

The postulated fire is an oil fire resulting from a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

TRANSFORMERS

ANALYSIS 71 – South Normal Station Service Transformer Fire Area XR-2, Zone N/A, Elevation Ground Level

GENERAL FIRE AREA DESCRIPTION

The south normal station service transformer is located approximately 75 feet east of the auxiliary boiler building, 75 feet southeast of the turbine building, and 150 feet south of the containment structure. This unit is adjacent to the north normal station service transformer and both Spare Normal Station Service Transformers. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Normal Station Transformer

Cables

FIRE PROTECTION

Suppression	- Automatic operating deluge water spray system/Line-Type heat detection system actuates suppression system.
	Manual actuation capability via a pull station at the control panel located adjacent to the transformer area and from the deluge valve located in the valve pit.
	Detection alarm, water flow alarm, and valve tamper signal transmit to the local deluge control panel, Zone Panel Number 12 located in the Deluge Building and to the control room main fire protection panel.
	Manual hose streams available from yard hose houses and hydrants.
Detection	- Line-type heat detection system provided as described above for suppression system actuation.
DESIGN FEATURES	

Construction - Refer to Figure 77B for a physical description of this area. Fire barrier wall used to separate adjacent transformers. Drainage - Drains to oil separation system; diked area with trap rock cover utilized for spilled oil retention and spill fire control.

TRANSFORMERS (CONT'D)

COMBUSTIBLE LOADING

Floor Area - 2,663 ft² Combustible Material Transformer Oil

SEVERITY CLASSIFICATION

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 160,000

POSTULATED FIRE

Moderate

The postulated fire is an oil fire resulting from a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

TRANSFORMERS

ANALYSIS 72 – North Spare Normal Station Service Transformer, Fire Area XR-3, Zone N/A, Elevation Ground Level

(Detection and suppression systems removed, see Note 1.)

GENERAL FIRE AREA DESCRIPTION

The north Spare Normal Station Service Transformer area is located approximately 50 feet east of the auxiliary boiler building, 75 feet southeast of the turbine building, and 150 feet south of the containment structure. This area is adjacent to both normal station service transformers and west of the Normal Station Service Transformers. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Spare Normal Station Service Transformer

FIRE PROTECTION

Suppression - Manual hose streams available from yard hose houses and hydrants.

Detection - None (See Note 1)

DESIGN FEATURES

Construction - Refer to Figure 77B for a physical description of this area.

Fire barrier wall used to separate fire areas.

Drainage - Drains to oil separation system; diked area with trap rock cover utilized for spilled oil retention and spill fire control.

COMBUSTIBLE LOADING

Floor Area - 719 ft²

Combustible Material

Transformer Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderate

<160,000

POSTULATED FIRE

The postulated fire is ignition of transient combustibles from a transient ignition source. Ignition of transformer oil is not credible for the de-energized spare transformer.

CONSEQUENCES OF POSTULATED FIRE

None

NOTE

1. The suppression/detection systems for the North and South Spare Normal Station Service Transformers and their associated alarms installed during initial plant startup (Fire Areas XR-3 and XR-4) have been removed from the plant per DC MP3-16-01121. See Fire Hazards Analysis 70 and 71 for new Normal Station Service Transformers.

TRANSFORMERS

ANALYSIS 73 – South Spare Normal Station Service Transformer, Fire Area XR-4, Zone N/A, Elevation Ground Level

(Detection and suppression systems removed, see Note 1.)

GENERAL FIRE AREA DESCRIPTION

The south spare normal station service transformer area is located approximately 50 feet east of the auxiliary boiler building, 75 feet southeast of the turbine building, and 150 feet south of the containment structure. This area is adjacent to both normal station service transformers and west of the Normal Station Service Transformers. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Spare Normal Station Service Transformers

FIRE PROTECTION

Suppression - Manual hose streams available from yard hose houses and hydrants.

Detection - None, (See Note 1)

DESIGN FEATURES

Construction - Refer to Figure 77B for a physical description of this area.

Fire barrier wall used to separate fire areas.

Drainage - Drains to oil separation system; diked area with trap rock cover utilized for spilled oil retention and spill fire control.

COMBUSTIBLE LOADING

Floor Area - 762 ft^2

Combustible Material

Transformer Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderate

<160,000

TRANSFORMERS (CONT'D)

POSTULATED FIRE

The postulated fire is ignition of transient combustibles resulting from a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

None

NOTE

The Suppression/detection systems for the North and South Spare Normal Station Service Transformers and their associated alarms installed during initial plant startup (Fire Areas XR-3 and XR-4) have been removed from the plant per DC MP3-16-01121. See Fire Hazards Analysis 70 and 71 for new Normal Station Service Transformers.

TRANSFORMERS

ANALYSIS 74 – East Reserve Transformer, Fire Area XR-5, Zone N/A, Elevation Ground Level

GENERAL FIRE AREA DESCRIPTION

The east reserve transformer is located 20 feet north of the boron recovery tank enclosure and 200 feet east of the waste disposal building. This unit is adjacent to the west reserve transformer. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Nonsafety-Related

Reserve Station Transformer

Cables

FIRE PROTECTION

Suppression - Automatic operating deluge water spray system/line-type heat detection system actuates suppression system.
Manual actuation from the deluge valve located in the valve pit.
Detection alarm, water flow alarm, and valve tamper signal transmit to the local deluge control panel, Zone Panel Number 9B located in the auxiliary building (Elevation 24 feet 6 inches) and to the control room main fire protection panel.
Manual hose streams available from yard hose houses and hydrants.
Detection - Line-type heat detection system provided as described above for suppression system actuation.

DESIGN FEATURES

-	Refer to Figure 77B for a physical description of this area.
	Fire barrier wall used to separate adjacent transformers.
-	Drains to oil separation system; diked area with trap rock cover utilized for spilled oil retention and spill fire control
	-

TRANSFORMERS (CONT'D)

COMBUSTIBLE LOADING

Floor Area - $1,777 \text{ ft}^2$ Combustible Material

Transformer Oil

SEVERITY CLASSIFICATION

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 160,000

Moderate

POSTULATED FIRE

The postulated fire is an oil fire resulting from a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

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TRANSFORMERS

ANALYSIS 75 – West Reserve Transformer, Fire Area XR-6, Zone N/A, Elevation Ground Level

GENERAL FIRE AREA DESCRIPTION

The west reserve transformer is located 20 feet north of the boron recovery tank enclosure and 200 feet east of the waste disposal building. This unit is adjacent to the east reserve transformer. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related Reserve Station Transformer

Cables

FIRE PROTECTION

Suppression	-	Automatic operating deluge water spray system/line-type heat detection system actuates suppression system.
		Manual actuation from the deluge valve located in the valve pit.
		Detection alarm, water flow alarm, and valve tamper signal transmit to the local deluge control panel, Zone Panel Number 9B located in the auxiliary building (Elevation 24 feet 6 inches) and to the control room main fire protection panel.
		Manual hose streams available from yard hose houses and hydrants.
Detection	-	Line-type heat detection system provided as described above for suppression system actuation.

DESIGN FEATURES

Construction	-	Refer to Figure 77B for a physical description of this area.
		Fire barrier wall used to separate adjacent transformers.
Drainage	-	Drains to oil separation system; diked area with trap rock cover utilized for spilled oil retention and spill fire control

TRANSFORMERS (CONT'D)

COMBUSTIBLE LOADING

Floor Area - 1,875 ft² Combustible Material

Transformer Oil

SEVERITY CLASSIFICATION

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 160,000

POSTULATED FIRE

Moderate

The postulated fire is an oil fire resulting from a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

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TURBINE BUILDING

ANALYSIS 76 – Oil Storage Room, Fire Area TB-1, Zone N/A, Elevation 14 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The turbine building is located south of the control building and service building, west of the main steam valve enclosure, and north of the auxiliary boiler enclosure and Warehouse Number 5/condensate polishing facility.

Fire Area TB-1 involves a small enclosure located in the northeast corner of Fire Area TB-2A. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Lube Oil Storage Tanks (Clean and Dirty)

Lube Oil Transfer Pump

FIRE PROTECTION

Suppression	-	Automatic wet pipe sprinkler system at ceiling level.
		Water flow alarm transmits to the control room/local alarms sound at the alarm check valve and the Zone Panel Number 6F located in the turbine building-west wall (Elevation 14 feet 6 inches).
		1.5 inch hose stations with 2.5 inch hose connections are located in Fire Area TB-2A
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	There is no detection provided in this area.

DESIGN FEATURES

Construction	-	Refer to Figures 77A and 77B for a physical description of this area.
		Three hour fire rated construction provided between adjacent fire areas.
		Six foot poured concrete walls serve as oil containment structure.
Drainage	-	Floor drains to oil separation system.

TURBINE BUILDING (CONT'D)

COMBUSTIBLE LOADING

Floor Area - 797 ft² Combustible Material

Lubricating Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Severe

240,000 or above

POSTULATED FIRE

The postulated fire is a lubricating oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

TURBINE BUILDING

ANALYSIS 77 – Basement Floor Area, Fire Area TB-2, Zone A, Elevation 7 feet and 14 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The turbine building is located south of the control building and service building, west of the main steam valve enclosure, and north of the auxiliary boiler enclosure and Warehouse Number 5/condensate polishing facility.

Fire Area TB-2, Zone A, involves the turbine building open floor areas and turbine condenser floor areas on Elevation 7 feet and Elevation 14 feet 6 inches, and the area below Elevation 38 feet 6 inches mezzanine in the condensate polishing enclosure. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Condensers

Condensate Pumps

Turbine Plant Component Cooling Heat Exchangers and Pumps

Condensate Polishing Demineralizers

Acid and Caustic Transfer Pumps, Heaters, and Tanks

Water Treating System Pumps and Tanks

Instrument Air Compressors, Dryers, Coolers, and Receivers

Service Air Compressors, Coolers, and Receivers

Feedwater Heaters

Cables

FIRE PROTECTION

Suppression - In both the turbine building and condensate polishing enclosure, automatic wet pipe sprinkler protection is provided below the 38 feet 6 inches mezzanine level and all obstructions over 4 feet wide.

Water flow alarms and valve tamper signals transmit to the control room/local alarms sound at the alarm check valve and Zone Panel Number ZP-6F located in the turbine building (Elevation 14 feet 6 inches).

TURBINE BUILDING (CONT'D)

1.5 inch hose stations with 2.5 inch hose connections are located in this area.

Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

There is no area detection in this area, except for smoke detectors located in the ceiling of the condensate polishing enclosure area. Detector alarms transmit to Zone Panel ZP-6F located in the Turbine Building (Elevation 14 feet 6 inches) and to the Control Room main Fire Protection Console and color-graphics CPUs.

DESIGN FEATURES

 Construction - Refer to Figures 77A and 77F for a physical description of this area. Three hour fire rated construction between adjacent fire areas with the exception of the north wall in the vicinity of the door leading to the service building (Fire Zone SB-4A) which is two hour fire rated construction. Non-fire rated construction of outdoor walls.
Drainage - Floor drains provided throughout the area.

COMBUSTIBLE LOADING

Floor Area -49,408 ft² **Combustible Material** Cable Insulation Lube Oils 480 V Load Center 480 V MCC **Control Panels** Transient Lube Oils Flammable Liquids Hydrazine **Office** Materials Rubber Wood Plastic Fiberglass

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TURBINE BUILDING (CONT'D)

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a lubricating oil or cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

TURBINE BUILDING

ANALYSIS 78 – Hydrogen Seal Oil Unit, Fire Area TB-2, Zone B, Elevation 14 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The turbine building is located south of the control building and service building, west of the main steam valve enclosure and north of the auxiliary boiler enclosure and Warehouse Number 5/condensate polishing facility.

Fire Area TB-2, Zone B, involves an open fire area within Fire Area TB-2A. This area is south of the turbine generator condensers on Elevation 14 feet 6 inches There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Hydrogen Seal Oil Unit Tank

Main Seal Oil Pump

Emergency Seal Oil Pump

Recirculating Seal Oil Vacuum Pump

Recirculating Seal Oil Pump

FIRE PROTECTION

Suppression -	-	Automatic operating deluge spray system.
		Rate compensated heat detection system initiates water spray automatically.
		Manual system actuation capability provided via a pull station adjacent to the deluge control panel and at the deluge valve.
		Water flow alarm, valve tamper signal, and heat detection signal transmit to the local deluge control panel, to Zone Panel Number 6F located in the turbine building (Elevation 14 feet 6 inches), and to the control room main fire protection panel.
		1.5 inch hose stations with 2.5 inch hose connections are located in Fire Area TB-2A.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	Rate compensated heat detection system provided for suppression system actuation as described above.
DESIGN FEATURES

Construction	-	Refer to Figure 77A for a physical description of this area.
		Open area/no construction features.
Drainage	-	Single floor drain to oil separation system.
		4-in. concrete dike around perimeter of seal oil unit for oil
		containment.

COMBUSTIBLE LOADING

Floor Area - 226 ft² <u>Combustible Material</u> Seal Oil

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 80,000

POSTULATED FIRE

The postulated fire is a seal oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

TURBINE BUILDING

ANALYSIS 79 – Equipment Mezzanine, Fire Area TB-2, Zone C, Elevation 38 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The turbine building is located south of the control building and service building, west of the main steam valve enclosure and north of the auxiliary boiler enclosure and Warehouse Number 5/condensate polishing facility.

Fire Area TB-2, Zone C, involves the Elevation 38 feet 6 inches mezzanine area of the entire turbine building and the condensate polishing enclosure. There is safe shutdown equipment in this area.

MAJOR EQUIPMENT

Safe Shutdown

Motor Control Center

Cables

Non Safety-Related

Feedwater Heaters

Moisture Separator Drain Tank

Condensate Polishing Equipment

Motor Control Centers

Control Cabinets

Cables

FIRE PROTECTION

Suppression	-	In both the turbine building and condensate polishing enclosure, automatic wet pipe sprinkler protection provided below Elevation 64 feet 6 inches and below all obstructions over 4 feet wide.
		Water flow alarm and valve tamper signal transmits to the control room/local alarms sound at the alarm check valve and Zone Panel Number ZP-6F located in the turbine building Elevation 14 feet 6 inches.
		1.5 inch hose stations with 2.5 inch hose connections are located throughout the area.
		Portable extinguishers are provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - There is no area detection in this area, except for the smoke detectors located in the ceiling of the condensate polishing enclosure area. Detector alarms transmit to Zone Panel ZP-6F located in the turbine building (Elevation 14 feet 6 inches) and to the control room Main Fire protection console and color-graphics CPUs.

DESIGN FEATURES

Construction	-	Refer to Figures 77C and 77F for a physical description of this area.
		3-hour fire-rated construction between adjacent fire areas with two exceptions: an 8 inch diameter fiberglass pipe and a partially sealed beam pocket in the north wall separating Fire Area TB-2, Zone C from Fire Area SB-4, Zone C.
Drainage	-	Open grating provides drainage to Elevation 14 feet 6 inches
		Floor drains are located in the condensate polishing enclosure area.

COMBUSTIBLE LOADING

43,945 ft² Floor Area -**Combustible Material** Cable Insulation 480 V Load Centers 480 V MCC **Control Panels** Lube Oils Transient Lube Oils Resin Flammable Liquids 6.9/4.16 kV Switchgear Plastic Rubber Wood Fiberglass

SEVERITY CLASSIFICATION

<u>FIRE LOADING VALUE</u> (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

Engineering Evaluation

Fire Protection Engineering Evaluation Number 174, "Service Building Mechanical Equipment Room (Elevation 52 feet 6 inches) South Wall" addresses the partially sealed beam pocket in the North Wall separating Fire Area TB-2, Zone C from Fire Area SB-4, Zone C.

TURBINE BUILDING

ANALYSIS 80 - Operating Floor, Fire Area TB-2, Zone D, Elevation 64 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The turbine building is located south of the control building and service building, west of the main steam valve enclosure and north of the auxiliary boiler enclosure and Warehouse Number 5/condensate polishing facility.

Fire Area TB-2, Zone D, involves the entire operating floor area exclusive of the alternator/exciter enclosure and the turbine shaft bearing areas. A fully sprinkled two-story modular building, known as the IMF Building is located at the north end of this Fire Area Zone. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related Turbine Generator Unit Feedwater Pumps Hydrogen Coolers

FIRE PROTECTION

Suppression - No fixed suppression systems for general area. Automatic operating deluge water spray system for feedwater pumps/rate compensated heat detection system actuates suppression system. Automatic wet-pipe sprinkler system protecting the IMF Building is directly tied-in to the Sprinkler System protecting the turbine building Lube Oil Reservoir and conditioner area.

1.5 inch hose stations with 2.5 inch hose connections are located throughout the area.

Portable extinguishers are provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection alarm, water flow alarm and valve tamper signal for feedwater pump area deluge system transmit to the local deluge control panel, Zone Panel Number 6F located in the turbine building (Elevation 14 feet 6 inches) and to the control room main fire protection panel. Water flow alarm for the TB Lube Oil Reservoir/IMF sprinkler systems transmit back to the Zone Panel ZP-6F and the Control Room main fire protection console/color-graphics. Flow switch transmit signal to separate local alarm at IMF Bldg.

Detection - There is no detection system in the general area. Rate compensated heat detection system provided in the feedwater pump area for suppression system actuation as described above.

DESIGN FEATURES

- Construction Refer to Figures 77D and 77F for a physical description of this area. Three hour fire rated construction except at the hollow core 8 inch block wall separating Fire Area TB-2, Zone D from Fire Area TB-2, Zone F (the turbine building general support area).
- Drainage Open stairwells/floor openings allow drainage to area below.

COMBUSTIBLE LOADING

Floor Area	-	37,937 ft ²
Combustible Mate	rial	
480 V Load Center	r	
Control Panels		
Clothing (cotton)		
Lube Oil		
Transient Lube Oil	l	
Plastic		
Rubber		
Fiberglass		

SEVERITY CLASSIFICATION

Insignificant

FIRE LOADING VALUE (BTU/FT²)

< 6,500

POSTULATED FIRE

The postulated fire is a lubricating oil fire resulting from a transient ignition source, electrical fault or mechanical heat source in one of the pump units.

CONSEQUENCES OF POSTULATED FIRE

ANALYSIS 81 – Turbine Shaft Areas, Fire Area TB-2, Zone E, Elevation 64 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The turbine building is located south of the control building and service building, west of the main steam valve enclosure, and north of the auxiliary boiler enclosure and Warehouse Number 5/condensate polishing facility.

Fire Area TB-2, Zone E, involves four exposed sections of the turbine shaft and the oil supply piping in the immediate area of the turbine bearings. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related High Pressure Oil Lift Pumps High Pressure Turbine Low Pressure Turbines

FIRE PROTECTION

Suppression	-	Automatic operating preaction sprinkler system.
		Single zone, rate compensated heat detection system is used to automatically actuate the deluge valve.
		Manual actuation of deluge valve via a pull station located adjacent to the deluge valve control panel and at the deluge valve.
		Water flow alarm and detection alarm transmits to the deluge valve control panel, the building alarm Zone Panel Number 6F and to the control room main fire protection panel. Supervisory air pressure is monitored to the deluge valve control panel and to the control room.
		1.5 inch hose stations with 2.5 inch hose connections are located throughout Fire Area TB-2D.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing requirements.
Detection	-	Heat detection system provided to automatically actuate the suppression system as described above.

DESIGN FEATURES

 Construction - Refer to Figures 77D and 77F for a physical description of this area. Standard turbine generator equipment housing-steel construction.
 Drainage - Through open floor areas around turbine unit to areas below.

COMBUSTIBLE LOADING

Floor Area - $5,197 \text{ ft}^2$

Combustible Material

Lube Oil

SEVERITY CLASSIFICATION Moderate

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 160,000

POSTULATED FIRE

The postulated fire is an oil fire resulting from a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

TURBINE BUILDING

ANALYSIS 82 – General Support Area, Fire Area TB-2, Zone F, Elevation 64 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The turbine building is located south of the control building and service building, west of the main steam valve enclosure, and north of the auxiliary boiler enclosure and Warehouse Number 5/condensate polishing facility.

Fire Area TB-2, Zone F, is an extension of the turbine building operating floor (Elevation 64 feet 6 inches) and communicates directly with TB-2D through an open 4 inch shake space area. This area is adjacent to Fire Areas CB-13 and CB-14. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Domestic Water Hot Water Heater

Office Furniture

General Storage

FIRE PROTECTION

Suppression	-	Automatic wet pipe sprinkler system below the suspended ceiling in the office areas and the wall between the office area and the high-bay/two-level maintenance crib.
		Control room receives water flow alarms/local alarm sounds at Zone Panel Number 6F located in the turbine building (Elevation 14 feet 6 inches).
		1.5 inch hose stations with 2.5 inch hose connections available in this area.
		Portable extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	None.

DESIGN FEATURES

Construction	-	Refer to Figures 77D and 77F for a physical description of this area.
		Three hour fire rated construction provided between adjacent fire areas/zones except at the hollow core 8 inch block wall separating Fire Area TB-2, Zone F from Fire Area TB-2, Zone D (i.e., the turbine building operating floor).
Drainage	-	Floor drain in high bay area. Fire protection water will drain via this drain to turbine deck and service building northwest stairwell through open doors.

COMBUSTIBLE LOADING

Floor Area - 6,221 ft² <u>Combustible Material</u> Paper Rubber

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is ignition of stored combustible materials by a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

TURBINE BUILDING

ANALYSIS 83 – Alternator/Exciter Enclosure, Fire Area TB-2, Zone G, Elevation 64 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The turbine building is located south of the control building and service building, west of the main steam valve enclosure and north of the auxiliary boiler enclosure and Warehouse Number 5/condensate polishing facility.

Fire Area TB-2, Zone G, involves the alternator/exciter enclosure located on the turbine operating floor south of the generator unit. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Turbine Generator Alternator/Exciter

FIRE PROTECTION

Suppression	-	Manually operated local application CO_2 system for the exciter bearings and casing.
		Actuation via a pull station located outside the enclosure.
		Local alarm upon discharge of CO_2 .
		1.5 inch hose stations with 2.5 inch hose connections are located throughout Fire Area TB-2D.
		Portable extinguishers are provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	Single zone, rate compensated heat detection within the enclosure with one detector located over each exciter bearing.
		Detection alarms transmit to the CO ₂ control panel, Zone Panel Number 6F located in the turbine building (Elevation 14 feet 6 inches) and to the control room main fire protection panel.

DESIGN FEATURES

Construction	-	Refer to Figures 77D and 77F for a physical description of this area.
		Standard alternator/exciter enclosure construction.
Drainage	-	Open floor to areas below.

COMBUSTIBLE LOADING

Floor Area - 281 ft^2

Combustible Material

Lube Oil

Transient Lube Oil

SEVERITY CLASSIFICATION Low

FIRE LOADING VALUE (BTU/FT²) < 80,000

POSTULATED FIRE

The postulated fire is an oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

TURBINE BUILDING

ANALYSIS 84 – Battery Room Number 6, Fire Area TB-3, Zone N/A, Elevation 38 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The turbine building is located south of the control building and service building, west of the main steam valve enclosure and north of the auxiliary boiler enclosure and Warehouse Number 5/condensate polishing facility.

Fire Area TB-3 involves a small area in the north end of Fire Area TB-2C adjacent to the lube oil reservoir and conditioner (Fire Area TB-4). There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related Battery Bank Battery Room Exhaust Fan

FIRE PROTECTION

Suppression	-	None.
		1.5 inch hose stations with 2.5 inch hose connections are located in Fire Area TB-2C.
		Portable extinguishers are provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	Single zone smoke detection provided.
		Detection alarms transmit to the control room/local alarms sound at Zone Panel Number 6F located in the turbine building (Elevation 14 feet 6 inches)

DESIGN FEATURES

Construction	-	Refer to Figure 77C for a physical description of this area.
		Three hour fire rated construction provided between adjacent fire areas.
Drainage	-	None.
Ventilation	-	System provided to maintain hydrogen concentration well below 2 percent.

COMBUSTIBLE LOADING

Floor Area - 210 ft^2

Combustible Material Batteries

SEVERITY CLASSIFICATION

<u>FIRE LOADING VALUE</u> (BTU/FT²) < 160,000

POSTULATED FIRE

Moderate

The postulated fire is a battery casing fire resulting from a transient ignition source or an electrical fault.

CONSEQUENCES OF POSTULATED FIRE

TURBINE BUILDING

ANALYSIS 85 – Lube Oil Reservoir and Conditioner, Fire Area TB-4, Zone N/A, Elevation 38 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The turbine building is located south of the control building and service building, west of the main steam valve enclosure and north of the auxiliary boiler enclosure and Warehouse Number 5/condensate polishing facility.

Fire Area TB-4 involves a one-story area with a mezzanine and is located at the northwest corner of Fire Area TB-2C. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Turbine Lube Oil Cooler and Reservoir

Lube Oil Conditioner and Conditioner Recirculation Pump

Emergency Bearings Oil Pump

Turning Gear Oil Pump

Auxiliary Oil Pump

Motor Suction Pump

FIRE PROTECTION

Suppression - Automatic operating wet pipe sprinkler system at the ceiling. Refer to Fire Area TB-2C analysis for details of this system.

Automatic operating water spray system for the lube oil reservoir and conditioner unit.

Rate compensated heat detection system used to actuate the spray system.

Manual actuation capability provided via a pull station located outside the two entryways to the area and at the deluge valve.

Water flow alarm, valve tamper signal, and detection alarm transmit to the deluge valve control panel, Zone Panel Number 6F located in the turbine building (Elevation 14 feet 6 inches) and to the control room main fire protection panel.

1.5 inch hose stations with 2.5 inch hose connections are located in Fire Area TB-2C.

Portable extinguishers are provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - Detection system provided as described above for suppression system actuation.

DESIGN FEATURES

Construction	-	Refer to Figures 77C and 77F for a physical description of this area.
		Three hour fire rated construction provided between adjacent fire areas.
Drainage	-	Floor drains connected to oil separation system.
Ventilation	-	Five foot high poured concrete walls provide containment for spilled oil.

COMBUSTIBLE LOADING

Floor Area - $1,103 \text{ ft}^2$

Combustible Material

Lubricating Oil

SEVERITY CLASSIFICATION Severe

FIRE LOADING VALUE (BTU/FT²)

240,000 or above

POSTULATED FIRE

The postulated fire is a lubricating oil fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

VACUUM PRIMING PUMP HOUSE

ANALYSIS 86 - General Area, Fire Area VP-1, Zone N/A, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The vacuum priming pump house is located at the end of the circulating water discharge tunnel at the edge of the quarry. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related Yard Vacuum Priming Tank Yard Vacuum Priming Pumps Yard Vacuum Priming Seal Water Recirculating Pumps Yard Vacuum Priming Tank Seal Water Heat Exchangers Yard Vacuum Priming Separator Silencers Motor Control Centers

FIRE PROTECTION

Suppression	-	No fixed suppression systems	
		Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.	
Detection	-	None.	

DESIGN FEATURES

Construction	-	Refer to Figure 77B for a physical description of this area.	
		Non fire-rated construction provided. Fire Area VP-2 is not adjacent	
		to other fire areas.	
- ·			

Drainage - Floor drains discharge into quarry.

COMBUSTIBLE LOADING

Floor Area - $1,254 \text{ ft}^2$

VACUUM PRIMING PUMP HOUSE (CONT'D)

Combustible Material Cable Insulation 480 V MCC Lube Oil Transient Lube Oil

SEVERITY CLASSIFICATION Low

FIRE LOADING VALUE (BTU/FT²) < 80.000

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

CONDENSATE POLISHING FACILITY

ANALYSIS 87 – Floor Areas, Fire Area CP-1, Zone N/A, Elevation 4 feet 6 inches, 28 feet 6 inches, 50 feet 6 inches, and 66 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The Warehouse Number 5/condensate polishing facility is located south of the MP 3 turbine building and auxiliary boiler enclosure and north of the MP 2 turbine building. This facility is shared between Millstone Units 2 and 3.

Fire Area CP-1 involves the condensate polishing equipment (various elevations) warehouse area on Elevation 28 fee 6 inches and miscellaneous office and general use areas on Elevation 50 feet 6 inches An equipment penthouse exists on Elevation 66 feet 6 inches There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Condensate Demineralizer Liquid/Solid Waste System and Related Equipment

Condensate Polishing System and Related Equipment

Cables

Diesel Instrument Air Compressor, Air Dryer, Receiver and Controls

FIRE PROTECTION

Suppression	-	Automatic wet pipe sprinkler protection provided in selected areas on Elevation 28 feet 6 inches and 50 feet 6 inches
		Alarms transmitted to panel 3FPM-ANN01 located in this facility (Elevation 14 feet 6 inches - southeast corner) to Zone Panel 6E located in the turbine building (Elevation 14 feet 6 inches, west wall) and to the control room main fire protection panel.
		1.5 inch hose stations with 2.5 inch hose connections are provided throughout all elevations.
		Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.
Detection	-	Single zone smoke detection provided in areas with appreciable combustible loading where automatic sprinkler protection does not exist.

CONDENSATE POLISHING FACILITY (CONT'D)

Alarms transmitted to panel 3FPM-ANN01 located in this facility (Elevation 14 feet 6 inches southeast corner), to Zone Panel 6E located in the turbine building (Elevation 14 feet 6 inches, west wall) and to the control room main fire protection panel.

DESIGN FEATURES

 Construction - Refer to Figures 77A, 77B, 77C, 77D and 77F for a physical description of this area. Non fire-rated construction provided. Fire Area VP-2 is not adjacent to other fire areas.
 Drainage - Floor drains discharge into quarry.

COMBUSTIBLE LOADING

Floor Area	-	* Elevation 4 feet-6 inches: 17	7,229 ft ²
		** Elevation 28 feet-6 inches: 17	,780 ft ²
		*** Elevation 50 feet-6 inches: 1	1,965 ft ²
		**** Elevation 66 feet-6 inches:	1,880 ft ²

Combustible Material

Cable Insulation * 480 V MCC * Control Panel * Lube Oil* Transient Lube Oil * Transient Resin * Cardboard * Paper * Plastic * Rubber * Wood * Cable Insulation **

CONDENSATE POLISHING FACILITY (CONT'D)

Combustible Material

480 V Load Center ** 480 V MCC ** Control Panel ** Lube Oil ** Transient Lube Oil ** Transient Resin ** Cardboard** Charcoal** Paper** Plastic** Rubber** Wood** Cable Insulation*** Paper*** Batteries*** Cardboard*** Clothing (cotton)*** Flammable Liquid*** Plastic*** Rubber*** Wood*** Cable Insulation****

SEVERITY CLASSIFICATION

Elevation 4 feet 6 inches	Low	< 80,000
Elevation 28 feet 6 inches	Low	< 80,000
Elevation 50 feet 6 inches	Low	< 80,000
Elevation 66 feet 0 inches	Insignificant	< 6,500

FIRE LOADING VALUE (BTU/FT²)

CONDENSATE POLISHING FACILITY

ANALYSIS 88 – Q.A. Records Storage Room, Fire Area CP-2, Zone N/A, Elevation 50 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The Warehouse Number 5/condensate polishing facility is located south of the MP 3 turbine building and auxiliary boiler enclosure and north of the MP 2 turbine building. This facility is shared between Millstone Units 1, 2, and 3.

Fire Area CP-2 involves the records storage area only. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

None.

FIRE PROTECTION

Suppression -		Automatic operating, total flooding Halon 1301 suppression system actuated by heat detectors.		
		Alarms transmitted to Panel 3FPM-ANN01 located in Fire Area CP-1 (Elevation 14 feet 6 inches); to Zone Panel ZP-6E located in the Turbine Building (Elevation 14 feet 6 inches, west wall) and to the control room main fire protection console.		
		1.5 inch hose stations with a 2.5 inches hose connection available on this floor elevation.		
		Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.		
Detection	-	Single-zone smoke detectors for early warning. Alarms transmitted to Panel 3FPM-ANN01 located in Fire Area CP-1 (Elevation 14 feet 6 inches); to Zone Panel ZP-6E located in the Turbine Building (Elevation 14 feet 6 inches, west wall) and to the control room main fire protection console. Single-zone, rate-compensated heat detection system arranged to actuate the Halon 1301 system.		

DESIGN FEATURES

Construction - Refer to Figures 77C and 77F for a physical description of this area.

CONDENSATE POLISHING FACILITY (CONT'D)

Floor is three hour fire rated construction; walls are two hour fire rated construction with three hour fire door; and roof deck underside and supporting steel is fireproofed with pyrocrete to a two hour fire rating.

Drainage - None.

COMBUSTIBLE LOADING

Floor Area - $1,122 \text{ ft}^2$

Combustible Material

Paper

SEVERITY CLASSIFICATION

Moderate

FIRE LOADING VALUE (BTU/FT²)

< 160,000

POSTULATED FIRE

The postulated fire is a paper fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

WASTE DISPOSAL BUILDING

ANALYSIS 89 – Floor Areas, Fire Area WDB-1, Zone A, Elevation 4 feet 6 inches, 16 feet 6 inches, 24 feet 6 inches, 43 feet 6 inches, and 68 feet

GENERAL FIRE AREA DESCRIPTION

The waste disposal building is located north of the fuel building and east of the auxiliary building.

Fire Area WDB-1, Zone A, involves all floor areas of the liquid waste portion of the facility and the pipe tunnel serving the boron recovery system. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety-Related

Boron Recovery System Demineralizer, Test Tank Pumps, and Evaporator Feed Pump

Liquid Waste System Evaporator Components

Spent Resin Facility Components

120 Volt Uninterruptible Power Supply (UPS) (Elevation 24 feet 6 inches)

FIRE PROTECTION

Suppression	-	No fixed suppression systems.		
		1.5inch hose stations with 2.5 inch hose connections provided. (Elevation 4 feet 6 inches, 24 feet 6 inches, 43 feet 6 inches, and 68 feet). Hose stations also available from northeast corner of auxiliary building on Elevation 4 feet 6 inches and 43 feet 6 inches.		
		Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.		
Detection	-	Single zone smoke detectors located at all elevations in areas with appreciable combustible loading. Control room receives all detection alarms. Local alarms sound at Zone Panel Number 9B located in the auxiliary building Elevation 24 feet 6 inches.		

DESIGN FEATURES

Construction - Refer to Figures 77A, 77B, 77C, 77D and 77F for a physical description of this area.

WASTE DISPOSAL BUILDING (CONT'D)

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Various locations at all elevations; 4-in. concrete dikes at doorway of most pump/tank cubicles.

COMBUSTIBLE LOADING

Floor Area	-	$6,130 \text{ ft}^2$ - Elevation 4 feet 6 inches*
		4,803 ft ² - Elevation 24 feet 6 inches
		4,803 ft ² - Elevation 43 feet 6 inches
		2,580 ft^2 - Elevation 68 feet 0 inches

Combustible Material

Cable Insulation

Control Panel

Lube Oil

Transient Lube Oil

480 V MCC

Batteries for 120 Volt UPS (Elevation 24 feet 6 inches)

SEVERITY CLASSIFICATION Low

FIRE LOADING VALUE (BTU/FT²) < 80,000

POSTULATED FIRE

The postulated fire is a cable insulation or switchgear fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

WASTE DISPOSAL BUILDING

ANALYSIS 90 – Solid Waste Area, Fire Area WDB-1, Zone B, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The waste disposal building is located north of the fuel building and east of the auxiliary building.

Fire Area WDB-1, Zone B, involves the open solid waste storage and handling area located north of and communicating directly with Fire Area WDB-1A. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Nonsafety-Related

Liquid Radwaste Processing System Self Engaging Dewatering System High Integrity Container (HIC)

FIRE PROTECTION

Suppression - Automatic wet pipe sprinkler system covers the entire area.

Waterflow alarms transmit to the main fire protection panel in the control room.

Local alarm transmit to Zone Panel Number 9B located in the auxiliary building Elevation 24 feet 6 inches.

Valve tamper switch transmits to control room and local Zone Panel Number 9B.

1.5 inch hose stations with 2.5 inch hose connections provided in area.

2.5 inch hose connection at 1.5 inch hose racks.

Portable fire extinguishers provided based on NFPA Standard Number 10 location and spacing guidelines.

Detection - None.

DESIGN FEATURES

Construction - Refer to Figures 77A, 77B, 77C, 77D and 77F for a physical description of this area.

Three hour fire rated construction provided between adjacent fire areas.

Drainage - Provided via outside doors.

WASTE DISPOSAL BUILDING (CONT'D)

COMBUSTIBLE LOADING

Floor Area - 4,803 ft² <u>Combustible Material</u> Cardboard Paper Transient Plastic Cable Insulation Lube Oil Rubber Transient Consumables Resin Plastic Control Panels Transient Resin Transient Activated Carbon

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a cable insulation fire resulting from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

STATION BLACKOUT DIESEL GENERATOR

ANALYSIS 91 - Enclosure, Fire Area SBO-1, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The station blackout diesel generator enclosure is a separate building located directly south of the Boron Recovery Tanks enclosure and approximately 100 feet east of the Fuel Building Railroad Track Bay east roll-up door.

Fire Area SBO-1 involves the SBO Diesel Generator and Switchgear Enclosures, interconnecting corridor and the 3000-gallon Fuel Oil Tank Enclosure located directly west of the Switchgear and south of the Diesel Generator enclosure.

MAJOR EQUIPMENT

Safe Shutdown

None

Safety-Related

None

Non Safety-Related

SBO Diesel Generator, SWGR equipment and Control Panels (MP2 shutdown equipment, credited for MP2 Appendix R fires in Areas R-1, R-11, R-16).

FIRE PROTECTION

Suppression - Automatic closed head preaction sprinkler protection is provided for the entire area. Local water flow alarm and valve tamper supervision are transmitted to the local Fire Protection Panel 3FPA-PNL ZP10 located in the west end of the SBO D/G Enclosure. The preaction valve (3FPW-FV84) and SBO fire protection water cutout valve (3FPW-V457) are located in the RSST deluge valve pit. A second in-line isolation valve (3FPW-V452) is added between the sprinkler heads and the preaction valve. It is located along the south wall of the Boron Tanks Recovery Enclosure for manual isolation of the sprinkler heads, if necessary. The cutout valve is normally open (with tamper switch) and the in-line isolation valve is normally locked open. Portable CO₂ and dry chemical fire extinguishers are provided throughout the area.

STATION BLACKOUT DIESEL GENERATOR (CONT'D)

Detection - Two (2) ceiling mounted rate-of-rise heat detectors located in the SBO D/G Enclosure for suppression system actuation. Smoke detectors are mounted at the ceiling of the SBO Switchgear enclosure and corridor for early warning.

The SBO fire detectors alarm at local fire panel 3FPA-PNL ZP10. A trouble alarm for position indication of the SBO deluge isolation valve 3FPW-V457 and the alarm for fire protection water flow are received at local fire panel 3FPA-PNL ZP10, zone panel 3FPA-PNL ZP4 (zones 21 and 22), and the Control Room main fire protection console and color graphics CPU units.

DESIGN FEATURES

Construction - SBO Emergency Diesel Generator and Switchgear Enclosure

Walls and Ceiling - Acoustic Insulation with composite perforated aluminum lining interior and sheet aluminum exterior for the SBO D/G Enclosure and fiberglass insulation with 0.032 mill finish stucco aluminum interior and sheet aluminum exterior for the Switchgear enclosure area. Aluminum framing.

Floor - Steel framing and plating on concrete slab. Doors/Frames - Non-Rated (to outside) Fire Dampers - None.

SBO Fuel Oil Vault

Walls & Floor - 12 inch thick reinforced concrete Ceiling - three-quarter inch thick steel plating.

COMBUSTIBLE LOADING

Floor Area - 916 ft²

Combustible Material

Lube Oil Fuel Oil Cable Insulation Control Panels 480 V MCC 6.9/4.16 kV Switchgear Batteries

STATION BLACKOUT DIESEL GENERATOR (CONT'D)

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is a pool fire in the SBO D/G enclosure area due to the rupturing of an oil transfer line or cable insulation/switchgear fire resulting from a transient ignition source of electrical fault.

CONSEQUENCES OF POSTULATED FIRE

A fire in this area would possibly involve electrical cables, lube oil and/or fuel for the SBO Diesel Generator. As a result, damage to the diesel generator/components would be expected. Because the area is fully protected by an automatic preaction sprinkler system which alarms back to the continually manned Control Room when actuated, a fire would be quickly detected and controlled/extinguished. Excessive oil and water would drain from the enclosure back to the Fuel Oil Vault via (2) two inch diameter spare lines running from the bottom of the enclosure to the Vault. The fire would also be detected by the rate-of-rise heat detectors in the SBO D/G Enclosure or by smoke detectors located in the SBO Switchgear Enclosure and connecting corridor. These detector systems alarm at the local fire panel 3FPA-PNL ZP10. In addition to the automatic preaction sprinkler system, portable CO_2 and dry chemical fire extinguishers are provided external and internal of the SBO D/G and Switchgear Enclosure areas for fire brigade use. Any damage is expected to be restricted to the immediate area/equipment/component involved. However, in the event that these cables and equipment sustain damage, plant safe shutdown can be achieved without this equipment.

DEVIATIONS

None

86-10 EVALUATIONS

None

STATION BLACKOUT DIESEL GENERATOR

ANALYSIS 92 – Station Blackout Diesel Generator Fuel Oil Storage Tank, Fire Area SBO-2, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

The station blackout diesel fuel oil storage tank is a separate above ground fuel storage tank with an integral containment dike located directly south of the station blackout diesel generator enclosure. The tank is approximately 100 feet east of the Fuel Building and directly south of the Boron Recovery tanks.

Fire Area SBO-2 involves the SBO diesel fuel oil storage tank and its auxiliaries including its integral containment dike.

MAJOR EQUIPMENT

Safe Shutdown

None

Safety-Related

None

Non Safety-Related

SBO Fuel Oil Storage Tank 3BGF-TK2 (MP2 shutdown equipment, credited for MP2 Appendix R fires in Fire Areas R-1, R-11 and R-16).

FIRE PROTECTION

Suppression - Fire fighting foam supplies and portable CO_2 and dry chemical fire extinguishers are provided for the area.

Detection - None

DESIGN FEATURES

Construction - SBO Fuel Oil Storage Tank

Containment - The containment dike is constructed of one-quarter inch thick carbon steel and sized to hold the contents of the tank.

Floor - Tank is mounted on a reinforced concrete slab.

STATION BLACKOUT DIESEL GENERATOR (CONT'D)

COMBUSTIBLE LOADING

Floor Area - 372 ft² Combustible Material - Fuel Oil

<u>SEVERITY CLASSIFICATION</u> <u>FIRE LOADING VALUE</u> (BTU/FT²) Severe 240,000 or above

POSTULATED FIRE

The postulated fire is a pool fire in the SBO Fuel Oil Storage Tank containment dike due to the rupturing of the tank and/or the fuel transfer line, and a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

A fire in this area would possibly involve the MP3 SBO diesel generator and its components. The fire is expected to be contained in the containment dike around the tank. However, the fire could produce radiant heat that may ignite a fire in the adjacent SBO-1 fire area. As a result, damage to the MP3 SBO diesel generator/components would be expected. Fire area SBO-1 has an automatic fire suppression system which would quickly extinguish the fire. Fire fighting foam, portable CO_2 fire extinguishers and dry chemical fire extinguishers are provided for the area (SBO-2) for fire brigade use to quickly extinguish the fire. MP3 safe shutdown can be achieved without this equipment.

In the event that the fuel oil storage tank sustains damage, safe shutdown can still be achieved for MP2 since a fire in MP2 Appendix R Fire Areas R-1, R-11 and R-16 is not assumed to occur coincident with an MP2 SBO event, an MP3 SBO event or a fire in the MP3 SBO area. There is no MP2 or MP3 safety related equipment within 50 feet of the above ground SBO fuel oil storage tank.

DEVIATIONS

None

86-10 EVALUATIONS

FP-EV-00-0002 BTP CMEB 9.5-1 Section C.7.j - Diesel Fuel Oil Storage Areas

86-10 evaluation FP-EV-00-0002 has been performed to justify that automatic fire suppression and detection is not provided on the SBO Fuel Oil Storage Tank 3BGF-TK2.

FIRE PUMP HOUSE BUILDING

ANALYSIS 93 – Fire Pump House, Fire Area FP-1, Elevation 14 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

This area/zone consists of the Fire Pump House Building located on the 14 feet 6 inches elevation south of the Unit 2 Fire Pump House and east of the Fire Water Storage Tanks. This area does not contain safe shutdown equipment.

The Unit 3 Fire Pumps remain in service as part of the Millstone Site Fire Water System. This is a non-contaminated/non-radiological area.

MAJOR EQUIPMENT

Safe Shutdown

None

Safety Related

None

Non Safety Related

Diesel Fire Pump (M7-7), Electric Fire Pump (M7-8), Jockey Pump (M7-11), and MCC-CD6.

Note: The two main fire pumps are TRM controlled components that support the Millstone Station Fire Water Supply System. The pumps also support MP2 for Appendix R requirements.

FIRE PROTECTION

Suppression - Automatic operation, total flooding Halon 1301 suppression system actuated by a cross-zoned smoke detector and rate of rise heat detector.

Detection alarms transmitted to local panel FCP (2462), to zone panels 3FPA-PNLZP6A and 3FPA-PNLZP11 located in the Turbine Building (Elevation 14 ft-6 in), and to the control room main fire protection console. Manual actuation capability via a pull station located within the Fire Pump House.

Portable extinguisher located in the fire pump house is provided based on NFPA Standard Number 10 location and spacing guidelines.

FIRE PUMP HOUSE BUILDING (CONT'D)

Detection - Cross-zoned smoke detector and rate of rise heat detector are provided as described above for suppression system actuation.

DESIGN FEATURES

Construction - Refer to Figure 77A for a physical description of this area.

Walls are 8 inch RC, floor is concrete, and roof is comprised of built up roof on steel deck.

Drainage - Floor drain provided within the pump house.

COMBUSTIBLE LOADING

Floor Area - 375 ft^2

Combustible Material

Fuel Oil Lube Oil Cable Insulation Paper Plastic Flammable Liquid Clothing (cotton) Rubber

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Moderate

< 160,000

POSTULATED FIRE

Ignition of combustible liquids associated with the diesel fire pump operation or electrical fire associated with the motor driven fire pump.

FIRE PUMP HOUSE BUILDING (CONT'D)

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as there is no Unit 3 Safe Shutdown Equipment in this area.

DEVIATION

A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11658, dated August 16, 1985 - Docket Number 50-423) regarding the separation and capacity of fire pumps.
POWER DISTRIBUTION CENTERS

Power Distribution Center - 1 (PDC-1) Variable Frequency Drives (3CWS-VFD1A & 3CWS-VFD1D)

ANALYSIS 94 – Enclosure Fire Area Building 332A, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

A Variable Frequency Drive (VFD) is an in-line power supply to control the operating speed of the Circulating Water Pump. There are two VFDs installed in a single Power Distribution Center (PDC). There are three PDCs installed on the west side of the Turbine Building.

Each of the PDCs have been given their own fire zone identification. Each PDC contains two VFDs comprised of a transformer cabinet, a relay cabinet and a power cell cabinet as well as associated cables, cable trays, distribution panels and HVAC units.

MAJOR EQUIPMENT

Safe Shutdown

None

Safety Related

None

Non Safety Related

Transformer cabinets (2), relay cabinets (2), power cell cabinets (2), cooling fan/blowers (12), 480V AC distribution panels (2), 120V AC distribution panels (2), HVAC units (4), UPSs (2) and no credit taken for MP3 Appendix R fires.

FIRE PROTECTION

- Suppression There is no automatic suppression system within the PDC. Two portable $(10 \text{ pound } \text{CO}_2)$ fire extinguishers are located internal to the PDC. Fire hydrant and hose stations are located immediately north and south of the PDC location.
- Detection Each PDC contains a fire detection system which consists of two thermal detectors, two photoelectric detectors, two pull stations, a two zone fire alarm control panel and an external horn/strobe unit.

POWER DISTRIBUTION CENTERS (CONT'D)

The detectors alarm at Simplex Panel 3FPA-PNLZP6F. Three spare zones (Zones 42, 45 and 34) within the panel are used to provide trouble/alarm inputs into the fire detection system for each of the three PDCs.

DESIGN FEATURES

Construction - VFD Switchgear Enclosure

Walls and ceiling - 18 gauge galvanized steel

Floor - 0.25 rolled steel plate on a concrete foundation pad

Doors/Frames - Not rated (to outside)

Fire dampers - None

COMBUSTIBLE LOADING

Floor Area - 632 ft^2

Combustible Material

Cable Insulation

Control Panels / Switchgear

Power Cells (integral to control panels)

HVAC Units (mounted external to PDC)

Fiberglass insulation in walls and ceiling (encased in metal walls, no heat loading considered)

Thermax insulation board in floors (encased in metal floor, no heat loading considered)

UPSs

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

< 80,000

POSTULATED FIRE

The postulated fire is an electrical fire due to an electrical fault either phase to phase, phase to ground or other type of overload condition.

POWER DISTRIBUTION CENTERS (CONT'D)

CONSEQUENCES OF POSTULATED FIRE

Any fire damage would be confined to the PDC. Fire detection in the area would alarm locally with both a horn and a strobe external to the structure as well as an alarm on 3FPA-PNLZP6F located on the west wall of the Turbine Building 14 feet 6 inches and the MP3 Fire Status Display 3CES-PNLFPS in the Control Room. Though the PDCs have no automatic fire suppression, timely response to the local and remote alarms will mitigate any damage with the use of local fire extinguishers or other manual suppression devices. In the event that these cables and equipment sustain damage, plant safe shutdown can be achieved without this equipment.

DEVIATION

None

86-0 1EVALUATIONS

POWER DISTRIBUTION CENTERS

Power Distribution Center - 2 (PDC-2) Variable Frequency Drives (3CWS-VFD1B & 3CWS-VFD1E)

ANALYSIS 95 – Enclosure Fire Area Building 332B, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

A Variable Frequency Drive (VFD) is an in-line power supply to control the operating speed of the Circulating Water Pump. There are two VFDs installed in a single Power Distribution Center (PDC). There are three PDCs installed on the west side of the Turbine Building.

Each of the PDCs have been given their own fire zone identification. Each PDC contains two VFDs comprised of a transformer cabinet, a relay cabinet and a power cell cabinet as well as associated cables, cable trays, distribution panels and HVAC units.

MAJOR EQUIPMENT

Safe Shutdown

None

Safety Related

None

Non Safety Related

Transformer cabinets (2), relay cabinets (2), power cell cabinets (2), cooling fan/blowers (12), 480V AC distribution panels (2), 120V AC distribution panels (2), HVAC units (4), UPSs (2) and no credit taken for MP3 Appendix R fires.

FIRE PROTECTION

- Suppression There is no automatic suppression system within the PDC. Two portable $(10 \text{ pound } CO_2)$ fire extinguishers are located internal to the PDC. Fire hydrant and hose stations are located immediately north and south of the PDC location.
- Detection Each PDC contains a fire detection system which consists of two thermal detectors, two photoelectric detectors, two pull stations, a two zone fire alarm control panel and an external horn/strobe unit.

POWER DISTRIBUTION CENTERS (CONT'D)

The detectors alarm at Simplex Panel 3FPA-PNLZP6F. Three spare zones (Zones 42, 45 and 34) within the panel are used to provide trouble/alarm inputs into the fire detection system for each of the three PDCs.

DESIGN FEATURES

Construction - VFD Switchgear Enclosure

Walls and ceiling - 18 gauge galvanized steel

Floor - 0.25 rolled steel plate on a concrete foundation pad

Doors/Frames - Not rated (to outside)

Fire dampers - None

COMBUSTIBLE LOADING

Floor Area - 632 ft^2

Combustible Material

Cable Insulation

Control Panels / Switchgear

Power Cells (integral to control panels)

HVAC Units (mounted external to PDC)

Fiberglass insulation in walls and ceiling (encased in metal walls, no heat loading considered)

< 80.000

Thermax insulation board in floors (encased in metal floor, no heat loading considered)

UPSs

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

POSTULATED FIRE

The postulated fire is an electrical fire due to an electrical fault either phase to phase, phase to ground or other type of overload condition.

POWER DISTRIBUTION CENTERS (CONT'D)

CONSEQUENCES OF POSTULATED FIRE

Any fire damage would be confined to the PDC. Fire detection in the area would alarm locally with both a horn and a strobe external to the structure as well as an alarm on 3FPA-PNLZP6F located on the west wall of the Turbine Building 14 feet 6 inches and the MP3 Fire Status Display 3CES-PNLFPS in the Control Room. Though the PDCs have no automatic fire suppression, timely response to the local and remote alarms will mitigate any damage with the use of local fire extinguishers or other manual suppression devices. In the event that these cables and equipment sustain damage, plant safe shutdown can be achieved without this equipment.

DEVIATION

None

86-10EVALUATIONS

Power Distribution Center - 3 (PDC-3) Variable Frequency Drives (3CWS-VFD1C & 3CWS-VFD1F)

ANALYSIS 96 – Enclosure Fire Area Building 332C, Elevation 24 feet 6 inches

GENERAL FIRE AREA DESCRIPTION

A Variable Frequency Drive (VFD) is an in-line power supply to control the operating speed of the Circulating Water Pump. There are two VFDs installed in a single Power Distribution Center (PDC). There are three PDCs installed on the west side of the Turbine Building.

Each of the PDCs have been given their own fire zone identification. Each PDC contains two VFDs comprised of a transformer cabinet, a relay cabinet and a power cell cabinet as well as associated cables, cable trays, distribution panels and HVAC units.

MAJOR EQUIPMENT

Safe Shutdown

None

Safety Related

None

Non Safety Related

Transformer cabinets (2), relay cabinets (2), power cell cabinets (2), cooling fan/blowers (12), 480V AC distribution panels (2), 120V AC distribution panels (2), HVAC units (4), UPSs (2) and no credit taken for MP3 Appendix R fires.

FIRE PROTECTION

- Suppression There is no automatic suppression system within the PDC. Two portable $(10 \text{ pound } \text{CO}_2)$ fire extinguishers are located internal to the PDC. Fire hydrant and hose stations are located immediately north and south of the PDC location.
- Detection Each PDC contains a fire detection system which consists of two thermal detectors, two photoelectric detectors, two pull stations, a two zone fire alarm control panel and an external horn/strobe unit.

POWER DISTRIBUTION CENTERS (CONT'D)

The detectors alarm at Simplex Panel 3FPA-PNLZP6F. Three spare zones (Zones 42, 45 and 34) within the panel are used to provide trouble/alarm inputs into the fire detection system for each of the three PDCs.

DESIGN FEATURES

Construction - VFD Switchgear Enclosure

Walls and ceiling - 18 gauge galvanized steel

Floor - 0.25 rolled steel plate on a concrete foundation pad

Doors/Frames - Not rated (to outside)

Fire dampers - None

COMBUSTIBLE LOADING

Floor Area - 632 ft^2

Combustible Material

Cable Insulation

Control Panels / Switchgear

Power Cells (integral to control panels)

HVAC Units (mounted external to PDC)

Fiberglass insulation in walls and ceiling (encased in metal walls, no heat loading considered)

< 80.000

Thermax insulation board in floors (encased in metal floor, no heat loading considered)

UPSs

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Low

POSTULATED FIRE

The postulated fire is an electrical fire due to an electrical fault either phase to phase, phase to ground or other type of overload condition.

POWER DISTRIBUTION CENTERS (CONT'D)

CONSEQUENCES OF POSTULATED FIRE

Any fire damage would be confined to the PDC. Fire detection in the area would alarm locally with both a horn and a strobe external to the structure as well as an alarm on 3FPA-PNLZP6F located on the west wall of the Turbine Building 14 feet 6 inches and the MP3 Fire Status Display 3CES-PNLFPS in the Control Room. Though the PDCs have no automatic fire suppression, timely response to the local and remote alarms will mitigate any damage with the use of local fire extinguishers or other manual suppression devices. In the event that these cables and equipment sustain damage, plant safe shutdown can be achieved without this equipment.

DEVIATION

None

86-10 EVALUATIONS

MAIN GSU TRANSFORMERS

ANALYSIS 97 – Main GSU Transformer 3MTX-XMA, Fire Area XR-7, Zone N/A, Elevation pedestal slab 23 feet 6 inches.

GENERAL FIRE AREA DESCRIPTION

The Main GSU Transformer 3MTX-XMA is located outside at pedestal slab elevation 23 feet 6 inches approximately 316 feet east of the Turbine Building and 308 feet south of the Containment Building centerline. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety Related

Main GSU Transformer 3MTX-XMA Main GSU Transformer 3MTX-XMA Coolers Cables

FIRE PROTECTION

- Suppression Automatic operating deluge water spray system protects transformer / open pit protected by open nozzle sprinklers / line-type heat detection system actuates suppression system.
- Manual actuation capability via pull station at control panel located adjacent to the Normal transformer area and from the deluge valve inside the Deluge Building Number 331 located just southeast of the Main GSU Transformer Bank.
- Detection alarm, water flow alarm, and valve tamper signal transmit to the local deluge panel 3FPW-PNL11 located in Deluge Building Number 331, to Zone Panel 3FPA-PNLZP11 located in the turbine building (elevation 14 feet 6 inches) and to the control room main fire detection panel.

Manual hose streams available from yard hose houses and hydrants.

Detection - Line-type heat detection system provided as described above for suppression system actuation.

DESIGN FEATURES

- Construction Refer to Figure 77B for a physical description of the area. Two hour fire barrier wall panels used to separate adjacent transformers.
- Drainage Drains to oil water separation system. Pit area utilized for spill oil retention and spill fire control, covered by open nozzle sprinkler system.

MAIN GSU TRANSFORMERS (CONT'D)

COMBUSTIBLE LOADING

Floor Area - 1,697 ft^2

Combustible Material

Transformer Oil Cable insulation

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Severe

240,000 or above

POSTULATED FIRE

The postulated fire is an oil fire from a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

None

86-10 EVALUATIONS

MAIN GSU TRANSFORMERS

ANALYSIS 98 – Main GSU Transformer 3MTX-XMB, Fire Area XR-8, Zone N/A, Elevation pedestal slab 23 feet 6 inches.

GENERAL FIRE AREA DESCRIPTION

The Main GSU Transformer 3MTX-XMB is located outside at pedestal slab elevation 23 feet 6 inches approximately 283 feet east of the Turbine Building and 278 feet south of the Containment Building centerline. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety Related

Main GSU Transformer 3MTX-XMB Main GSU Transformer 3MTX-XMB Coolers Cables

FIRE PROTECTION

Suppression - Automatic operating deluge water spray system protects transformer / open pit protected by open nozzle sprinklers / line-type heat detection system actuates suppression system.

> Manual actuation capability via pull station at control panel located adjacent to the Normal transformer area and from the deluge valve inside the Deluge Building Number 331 located just southeast of the Main GSU Transformer Bank.

Detection alarm, water flow alarm, and valve tamper signal transmit to the local deluge panel 3FPW-PNL11 located in Deluge Building Number 331, to Zone Panel 3FPA-PNLZP11 located in the turbine building (elevation 14 feet 6 inches) and to the control room main fire detection panel.

Manual hose streams available from yard hose houses and hydrants.

Detection - Line-type heat detection system provided as described above for suppression system actuation.

DESIGN FEATURES

Construction - Refer to Figure 77B for a physical description of the area. Two hour fire barrier wall panels used to separate adjacent transformers.

Drainage - Drains to oil water separation system. Pit area utilized for spill oil retention and spill fire control, covered by open nozzle sprinkler system.

MAIN GSU TRANSFORMERS (CONT'D)

COMBUSTIBLE LOADING

Floor Area - $1,753 \text{ ft}^2$

Combustible Material

Transformer Oil

Cable insulation

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Severe

240,000 or above

POSTULATED FIRE

The postulated fire is an oil fire from a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

None

86-10 EVALUATIONS

MAIN GSU TRANSFORMERS

ANALYSIS 99 – Main GSU Transformer 3MTX-XMC, Fire Area XR-9, Zone N/A, Elevation pedestal slab 23 feet 6 inches.

GENERAL FIRE AREA DESCRIPTION

The Main GSU Transformer 3MTX-XMC is located outside at pedestal slab elevation 23 feet 6 inches approximately 251 feet east of the Turbine Building and 247 feet south of the Containment Building centerline. There is no safe shutdown equipment in this area.

MAJOR EQUIPMENT

Non Safety Related

Main GSU Transformer 3MTX-XMC Main GSU Transformer 3MTX-XMC Coolers Cables

FIRE PROTECTION

Suppression - Automatic operating deluge water spray system protects transformer / open pit protected by open nozzle sprinklers / line-type heat detection system actuates suppression system.

> Manual actuation capability via pull station at control panel located adjacent to the Normal transformer area and from the deluge valve inside the Deluge Building Number 331 located just southeast of the Main GSU Transformer Bank.

Detection alarm, water flow alarm, and valve tamper signal transmit to the local deluge panel 3FPW-PNL11 located in Deluge Building Number 331, to Zone Panel 3FPA-PNLZP11 located in the turbine building (elevation 14 feet 6 inches) and to the control room main fire detection panel.

Manual hose streams available from yard hose houses and hydrants.

Detection - Line-type heat detection system provided as described above for suppression system actuation.

DESIGN FEATURES

Construction - Refer to Figure 77B for a physical description of the area. Two hour fire barrier wall panels used to separate adjacent transformers.

Drainage - Drains to oil water separation system. Pit area utilized for spill oil retention and spill fire control, covered by open nozzle sprinkler system.

MAIN GSU TRANSFORMERS (CONT'D)

COMBUSTIBLE LOADING

Floor Area - $1,697 \text{ ft}^2$

Combustible Material

Transformer Oil Cable insulation

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²)

Severe

240,000 or above

POSTULATED FIRE

The postulated fire is an oil fire from a transient ignition source.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

None

86-10 EVALUATIONS

MAIN GSU TRANSFORMERS

ANALYSIS 100 – Deluge Building Number 331, Fire Area XR-11, Zone N/A, Elevation (ground) approximately 17 feet 0 inches

GENERAL FIRE AREA DESCRIPTION

Deluge Building Number 331 is a prefabricated concrete building located east of the power block at ground elevation approximately 343 feet east of the Turbine Building and 340 feet south of the Containment Building centerline (just southeast of Main GSU Transformer Number 3MTX-XMA). There is no safe shutdown equipment in this building or within 50 feet of it.

MAJOR EQUIPMENT

Non Safety Related

Fire Deluge Piping, Valves and associated trim Fire Control Panel Building Distribution and Lighting Panel Transformers (dry)

FIRE PROTECTION

Suppression - 10 pound A/B/C Dry Chemical Fire Extinguisher (hand held).

Manual hose streams available from yard hose houses and hydrants.

Manual actuation capability for transformers at control panel located in building Number 331 located southeast of the Main GSU Transformer Bank.

Detection - Smoke detection and signal.

Building Smoke Detection alarm signal transmits to the local deluge panel 3FPW-PNL11 located in Deluge Building Number 331, to Zone Panel 3FPA-PNLZP11 located in the turbine building (elevation 14 feet 6 inches) and to the control room fire detection panel.

DESIGN FEATURES

Construction - Refer to Figure 77B for a physical description of the area. Transformer fire barrier wall separates adjacent transformers.

Drainage - Drain piping provided inside building, drains to outside.

MAIN GSU TRANSFORMERS (CONT'D)

COMBUSTIBLE LOADING

Floor Area - 288 ft^2

Combustible Material

Styrofoam Celluloses Fiberglass Printed Circuit Boards

SEVERITY CLASSIFICATION

FIRE LOADING VALUE (BTU/FT²) < 80,000

Low

POSTULATED FIRE

The postulated fire is a Class A fire from a transient ignition source or electrical fault.

CONSEQUENCES OF POSTULATED FIRE

This area complies with Section C.5.b of BTP CMEB 9.5-1, as documented in the Millstone 3 safe shutdown analysis. In the event of a fire in this area, the plant can be safely shutdown using equipment located in separate fire areas.

DEVIATION

None

86-10 EVALUATIONS

MAIN GSU TRANSFORMERS

ANALYSIS 101 – Diesel Instrument Air System - Diesel Generator, Fire Area CR3, Zone N/A, Elevation 20 feet 0 inches

GENERAL FIRE AREA DESCRIPTION

The MP3 Diesel Instrument Air System diesel generator is a separate self-contained unit located outdoors, on the west side of the CPF building. The diesel generator is located approximately 16 feet from the CPF building.

MAJOR EQUIPMENT

Safe Shutdown

None

Safety-Related

None

Non Safety-Related

Self-contained diesel generator (ID Number 3IAS-DG1) with integral 450 gallon, fuel oil storage tank

FIRE PROTECTION

Suppression - Fire hydrants, and firefighting foam supplies are provided for the area. A "BlitzFire" hose nozzle will be staged in the adjacent hose house for utilization in the event of a diesel generator fire.

Detection - None

DESIGN FEATURES

The diesel generator is a factory manufactured, self-contained unit, with a carbon steel, self-contained leak containment system with a 110% capacity for all fluids in the diesel unit including the fuel storage tank.

COMBUSTIBLE LOADING

Floor Area 56 FT^2 (diesel generator unit area)

MAIN GSU TRANSFORMERS (CONT'D)

Combustible Material Fuel Oil Lubricating Oil Rubber/Plastic

SEVERITY CLASSIFICATION	FIRE LOADING VALUE (BTU/FT ²)
Severe*	> 240,000

*The Severity Classification is due to the 450 gallons of fuel oil contained in the diesel generator unit.

POSTULATED FIRE

The postulated fire is a fire internal to the diesel generator that ignites the associated (on-board) lubricating and fuel oil.

CONSEQUENCES OF POSTULATED FIRE

A fire in this area would involve the MP3 Diesel Instrument Air System's diesel generator. The fire is expected to be contained to/within the integral diesel generator unit. The diesel generator has a 110% capacity containment designed to contain 110% of the fluids used in the diesel generator. However flames could reach beyond the diesel generator unit. To preclude the fire from interacting with the CPF, the diesel generator unit has been located more than 15 feet from the building. The CPF is the only building located in close proximity to the diesel generator unit.

In the event that the MP3 Diesel Instrument Air System's diesel generator sustains damage, safe shutdown can be achieved for MP3 without instrument air.

DEVIATION

SECTION 6—SAFE SHUTDOWN EVALUATION

6.1 BASIS AND ASSUMPTIONS

A catastrophic fire at Millstone 3, which could include damage to a fire area or impact the plant's ability to achieve or maintain safe shutdown conditions, was the basis for this evaluation. Specific details of the evaluation are contained in the MP3 Branch Technical Position 9.5-1 Compliance Report.

Major assumptions in addressing safe shutdown capabilities are as follows:

- 1. While operating at power, the unit develops a fire in any one fire area or zone which could affect safe shutdown equipment or systems.
- 2. The unit is brought to hot standby immediately by tripping the reactor/turbine and is capable of remaining at hot shutdown status and then achieving cold shutdown conditions in 72 hours.
- 3. Loss of off site power is assumed coincident with the fire. For the hot short portion of the circuit failure analysis, off site power is assumed to be available as it represents the worst case with respect to spurious operation of the equipment.
- 4. Safe shutdown is achieved using only on site powered equipment. Both QA and non-QA equipment can be used to achieve safe shutdown.
- 5. No additional, single, or multiple failures or events are considered, other than those generated by the fire.
- 6. All equipment required for hot standby either fail in a safe position or is protected to the extent that at least one method of shutdown will be undamaged by the postulated fire.
- 7. Mechanical equipment (e.g., pipe, heat exchangers, pumps, valves with manual operators/overrides) are assumed to be operable after the fire. The system pressure boundary is unaffected.
- 8. Systems required for cold shutdown are protected to the extent that any required fire damaged components can be repaired and cold shutdown achieved within 72 hours using on site resources. Materials required for repairs are from a dedicated supply on the site. Procedures are available documenting the method of intended repairs. Repair crews will not utilize members of the fire brigade.
- 9. Systems not required for immediate use will be protected to the extent that safe shutdown can be accomplished with only minor operator actions (e.g., local manual control of valves). Adequate operations personnel are available to

complete manual actions outside the control room within the necessary time interval.

6.2 SYSTEMS REQUIRED FOR SAFE SHUTDOWN

6.2.1 EACH FUNCTION REQUIRED TO ACHIEVE AND MAINTAIN SAFE SHUTDOWN WAS EVALUATED BY FIRE AREA

These functions are as follows:

- Reactivity Control (Reactor trip, scram and boration capability)
- Reactor Coolant Makeup
- Reactor Coolant System Pressure Control
- Decay Heat Removal
- Process Monitoring
- Support (The systems required to support the above functions)

The systems to perform these functions are as follows: (Figures referenced in this section are FSAR figures.)

Figures 5.1–1 and 5.1–2 - Reactor Coolant System Figure 9.3–8 - Chemical and Volume Control System Figure 10.4–9 - Auxiliary Feedwater System Figure 6.3–1 - Residual Heat Removal System Figure 9.2–2 - Component Cooling Water System Figure 9.2–1 - Service Water System

In addition to the above functions, the systems required to support these functions were also evaluated. A general description of each system to fulfill each function is provided in the sections which follow.

Inherent in the design of Millstone 3 is the system flexibility to allow accomplishment of shutdown functions by more than one method. This flexibility is such that, in most cases, if equipment in one area is damaged by fire, equipment located within another area can accomplish the shutdown function. The system flexibility, forms the fundamental philosophy for achieving safe shutdown following fires. Refer to the MP3 BTP-9.5-1 Compliance Report for specific details of the safe shutdown analysis and Section 3.2 of the MP3 BTP CR for simplified flow diagrams of the safe shutdown systems.

6.2.1.1 Decay Heat Removal via Main Steam/RCS Instrumentation

Following a postulated transient exposure fire, the plant could reject decay heat either by dumping steam to the atmosphere via main steam safety valves and/or power operated relief valves, if available. If the fire is located within the main steam valve building and all electrical controls on valves were lost, heat will be rejected by releasing steam to the atmosphere through the main steam safety valves. Cold shutdown may be achieved via manual local operation of the Atmospheric Dump Bypass Valves depressurizing to RHR entry conditions.

Essential primary and secondary instrumentation indication is available for all postulated fires at both the main control room and the auxiliary shutdown panel (refer to Figure 6-1.2).

6.2.1.2 Reactor Coolant System Letdown

Reactor coolant letdown can be accomplished by Method A, the normal letdown path through the chemical volume control system (CHS), or Method B, through the reactor vessel head vent system to the pressurizer relief tank (PRT). Method B is used when a fire could affect the ability of the valves in Method A to be properly positioned. Because of redundant safety grade paths in Method B, control of reactor coolant letdown is always available to achieve safe shutdown.

6.2.1.3 Auxiliary Feedwater System

The auxiliary feedwater system supplies water to the secondary side of the steam generator, thus maintaining a secondary heat sink for decay heat removal. Method A consists of two Class 1E motor-driven pumps and redundant valves and piping. One motor-driven pump is capable of supplying the required feedwater flow to two steam generators. Method B consists of one turbine-driven feed pump and associated piping and valves to each steam generator. In most of the postulated fires, Method B is available to provide two or more steam generators with auxiliary feedwater. When Method B becomes unavailable, Method A can provide auxiliary feedwater injection to two or more steam generators. The auxiliary feedwater pumps take suction from the demineralized water storage tank (DWST). Additional auxiliary feedwater is available from the condensate storage tank (CST).

6.2.1.4 Reactor Coolant Boration

Following a fire, the charging pump suction would be diverted from the volume control tank (VCT) to the boric acid tank (BAT) or the refueling water storage tank (RWST). Boric acid would then be provided through gravity feed lines to the charging pumps. If the three charging pumps were lost due to a fire, boration could be accomplished by using the safety injection pumps and borated water from the RWST. This must be accomplished in conjunction with RCS depressurization because of the high pressure safety injection pump head capabilities.

6.2.1.5 Reactor Coolant System Pressure Control

To aid in achieving safe shutdown, the reactor coolant system (RCS) must be depressurized by one of two methods. The charging pumps provide borated water to the pressurizer via the

auxiliary spray line. This water cools the steam bubble in the pressurizer, causing the RCS pressure to decrease. If this method is unavailable, the reactor coolant is vented to the pressurizer relief tank (PRT) via the power operated relief valves (PORV). This method provides a safety grade method ensuring the plant's safe shutdown capabilities.

6.2.1.6 Residual Heat Removal System

The Millstone 3 plant is designed so that one method of RHR is always available in the event of a postulated fire. RHR is required only for cold shutdown, which provides a sufficient time interval for manual valve operations, if required.

6.2.1.7 Component Cooling Water System

This function provides cooling water to the RHR heat exchangers to remove decay heat from the RCS. If all three component cooling water pump motors were damaged due to fire, the plant is able to safely remain at hot shutdown until the system is repaired (Section 9.2).

6.2.1.8 Service Water System

The service water system provides the ultimate heat sink for the CCP system and the emergency diesel generators. Method A provides cooling water for the orange diesel generator, while Method B provides cooling water for the purple diesel generator. This design assures the availability of one method of service water.

6.2.2 REACTOR COOLANT SYSTEM HIGH/LOW PRESSURE INTERFACE

A review was conducted to identify low-pressure system interfaces with the RCS. Interface points which consist of passive pressure boundary barriers (reactor coolant pump thermal barriers and seals, manually operated normally closed valves), were not considered; such boundaries are designed with sufficient margin to ensure that the design conditions of the reactor coolant pressure boundary are not exceeded during any condition of normal operation, and are not subject to spurious actuations. The remaining interface points were examined from a fire protection viewpoint to determine whether spurious valve actuations due to a fire could result in loss of RCS pressure or inventory control. Refer to the MP3 BTP 9.5-1 Compliance Report for specific details.

6.2.3 LOSS OF OFFSITE POWER

BTP CMEB 9.5-1 Section C.5.c.(3) states in part:

"the alternative shutdown capability shall be independent of the specific fire area(s) and shall accommodate postfire conditions where offsite power is available and where offsite power is not available for 72 hours."

A fire event coincident with a loss of offsite power is the limiting scenario and it represents a "worst case" approach. For this reason safe shutdown capability is maintained in the event of a fire occurring in any one fire area coincident with a loss of offsite power. This position is more

limiting than any other scenarios wherein off site power remains available. In the fire scenario where off site power remains available, maximum flexibility is afforded in the selection of systems unaffected by the fire which could be used to reach safe shutdown conditions. Refer to the MP3 BTP 9.5-1 Compliance Report for specific details.

6.3 ELECTRICAL EVALUATION

6.3.1 FIRE-INDUCED CIRCUIT FAILURE ANALYSIS

For details related to the fire induced circuit failure analysis, including associated circuit concerns (i.e., breaker coordination, multiple high impedance faults, spurious actuations and common enclosures), refer to the MP3 BTP 9.5-1 Compliance Report.

6.3.2 ELECTRICAL EVALUATION METHODOLOGY

6.3.2.1 Systems

System functions required for safe shutdown are identified in Section 6.2. System functions, including supporting systems, were evaluated by developing the system function availability matrix. By using this matrix, justification is demonstrated that the ability for Millstone 3 to achieve safe shutdown conditions is maintained in the event of a postulated fire. For specific details, refer to the MP3 BTP 9.5-1 Compliance Report.

6.3.3 ELECTRICAL EVALUATION OF SAFE SHUTDOWN FUNCTIONS

By review of the appropriate cable routing documents, the electrical evaluation was performed for the safe shutdown functions identified in Section 6.2. Refer to the MP3 BTP 9.5-1 Compliance Report for specific details.

SECTION 7—SUPPORT SYSTEMS

The active support systems required for safe shutdown (Section 6.2) are shown as follows. Refer to the MP3 BTP 9.5-1 Compliance Report, Sections 3.2 and 3.3 for simplified diagrams of these systems.

- 1. Emergency AC and DC Distribution
- 2. Diesel generators (includes EDG Air Start, Jacket Cooling Water, Lube Oil and Fuel Oil System)
- 3. Emergency Switchgear/Battery Room HVAC Control Building Ventilation (includes Chilled Water System, Control Room, Instrument Rack Room and Computer Rooms)

Emergency Diesel Generator Room Ventilation

ESF/Auxiliary Building Ventilation (includes AFW Pump Cubicles, SIH and RHR/MCC Area and CHS - CCP Cooling HVAC)

Circulating/Service Water Pumphouse Ventilation

Containment Ventilation

- 4. Reactor coolant pump seal cooling
- 5. Instrument air
- 6. Emergency lighting
- 7. Communications
- 8. Process Monitoring

7.1 EMERGENCY AC AND DC DISTRIBUTION

The 125 VDC and 120 VAC vital systems supply uninterrupted power to safety-related components necessary for safe shutdown and to maintain a safe shutdown condition.

Normally, 125 VDC power is supplied to the DC buses through a battery charger. With a loss of off site power, batteries supply 125 VDC to the DC buses and to the vital buses through the inverters for 2 hours or until an on site AC supply reestablishes the normal AC powered charger and rectifier inputs.

The Class 1E 125 V batteries are located in the control building in physically separate battery rooms. The loss of any battery room by fire does not affect safe shutdown capability.

7.2 EMERGENCY DIESEL GENERATORS

One emergency diesel generator is required for safe shutdown subsequent to a fire in any fire area. Diesel engine cooling water is provided by service water which has been demonstrated, to be available. The ventilation fans and dampers for both diesel generator rooms are controlled from the ventilation panel (VP-1) in the main control room. To mitigate the potential consequences of a main control room disabling fire, the control circuits are de-energized in the respective emergency switchgear room to remove power from the dampers, causing them to fail open.

7.3 VENTILATION

Emergency switchgear room ventilation fans are controlled from the VP-1 panel in the main control room. Control of fans 3HVC*ACU4A, B and 3HVC*ACU3A and B are operational from their power source in the switchgear room independent of the main control room, instrument rack room, and cable spreading room.

Manual alignment of service water to the east (orange) switchgear ventilation units cooling coils maintains space temperatures within allowable limits to support equipment and personnel.

7.4 COOLING TO THE REACTOR COOLANT PUMP SEALS

To prevent the reactor coolant pump (RCP) seals from failure due to overheating, cooling water is supplied from either the component cooling water system (CCP) and/or the chemical and volume control system (CHS). Normally, both of these systems supply cooling water to the RCP seals, although only one source is needed when the reactor coolant pumps are not in operation. Both the CCP pump and the CHS pumps are located in the same fire area AB-1, auxiliary building elevation 24 feet 6 inches. The charging pumps are located within individual cubicles with a labyrinth access way. The CCP pumps are located at the other end of the auxiliary building (greater than 50 feet apart). In addition, the area is provided with automatic fire suppression and detection. Failure of the three charging pumps coincident with the failure of the three component cooling water pumps due to fire is considered an incredible event. Therefore, the loss of either the charging pumps or the component cooling water pumps does not affect the safe shutdown capability of Millstone 3.

7.5 INSTRUMENT AIR SYSTEM

Normally, the instrument air system supplies air to the valves required to operate for safe shutdown (e.g., letdown, depressurization).

This air is supplied by two safety powered air compressors. In the event that both of these compressors are damaged due to the fire, Millstone 3 is designed so that the required function of the letdown and depressurization is accomplished by other safety grade methods (i.e., reactor head vent system, venting to the PRT). Therefore, the loss of the instrument air system due to fire does not affect the plant's ability to achieve and maintain safe shutdown conditions.

7.6 EMERGENCY LIGHTING

Appendix R, Paragraph IIIJ of 10 CFR 50, requires emergency lighting with at least an 8 hour battery power supply for all areas needed for the operation of safe shutdown equipment and in access and egress routes to these areas. The present design of Millstone 3 provides 8 hour self-contained battery packs for all areas identified in Position C.5.g of BTP CMEB 9.5-1. For certain event specific tasks, portable lighting is relied upon to supplement the emergency lighting design basis. In addition, emergency lighting is supplemented with the Millstone Station Security Lighting for outdoor access/egress routes, and access to the Appendix R equipment cage in Warehouse Building number 435. For additional details with respect to emergency lighting, refer to the BTP 9.5-1 Compliance Report.

DC lighting with eight hour self-contained sealed battery packs are also installed inside the MP3 SBO (AAC) diesel and switchgear enclosures for access/egress and operation of equipment from the control board. The MP3 SBO diesel generator is credited to supply MP2 with alternate AC power in the event of a fire in specifically identified Unit 2 Appendix R fire areas.

The security lighting system is also credited for MP3 operations personnel access/egress yard area routes to the MP3 SBO (AAC) diesel and switchgear enclosures. Access is required to start the diesel and energize the 4160 volt tie to MP2 in the event of a MP2 Appendix R fire in certain areas.

7.7 COMMUNICATION

Communication systems are described in FPER Section 4.5.

7.8 PROCESS VARIABLE MONITORING

The orange channel of the required instrumentation is available at the main control board for fires in all areas of the plant except for the orange switchgear room, orange cable tunnel, orange MCC and rod control area, orange service water cubicle, orange diesel generator room, and areas of the ESF building where service water is lost to the orange EDG. For fires in each of these areas, the purple train indicators are available in the main control room.

A fire in the instrument rack room, main control room, cable spreading room or supporting equipment rooms may disable both trains of indication at the auxiliary shutdown panel (ASP) through the loss of their supporting electronics and power supplies in the instrument rack room. For this event, additional safety/non-safety related instrumentation is located in the orange switchgear room to replace those components lost by fire.

The additional safety/non-safety related instrumentation is located on the instrument process panel located in the orange emergency switchgear room. All replacement instrumentation is powered from safety-related sources to ensure its operability during a fire with the assumed loss of off site power.

Existing indicators on the ASP are utilized by transferring them into the new indication circuitry in the fire transfer panel through a single transfer device at the fire transfer panel. Reactor coolant system cold leg temperature indication is available following fires in the IRR, CR, or CSR through umbilical transfer to an orange power supply at the ASP.

Source and intermediate range neutron detectors have primary electronics located in the control room with indicators in the main control board and on the ASP. Two additional detectors are powered from associated electronics located in each of the orange and purple switchgear rooms. Power is provided from a safety-related bus. The new indicators for these detectors are mounted in the NIS cabinets in the main control room and also near the ASP.

The existing indicators on the ASP to be used for the following:

Pressurizer pressure Pressurizer level Reactor coolant hot leg temperature Reactor coolant cold leg temperature Steam generator level Steam generator pressure Reactor coolant pressure Neutron source range

Refer to the MP3 BTP9.5-1 Compliance Report for additional process variables details.

Revision 34-06/30/21

MPS-3 FPER

FPER FIGURE: 77A FIRE HAZARD ANALYSIS ELEVATION 3 FEET 8 INCHES

Revision 34-06/30/21

MPS-3 FPER

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Revision 34-06/30/21

MPS-3 FPER

FPER FIGURE: 77C FIRE HAZARD ANALYSIS ELEVATION 38 FEET 6 INCHES

Revision 34-06/30/21

MPS-3 FPER

FPER FIGURE: //D FIRE HAZARD ANALYSIS ELEVATION 52 FEET 6 INCHES	

Revision 34—06/30/21

MPS-3 FPER

FPER FIGURE: 77E FIRE HAZARD ANALYSIS ELEVATION (ROOF PLAN)

Revision 34—06/30/21

MPS-3 FPER

FPER FIGURE: 77F FIRE HAZARD ANALYSIS ELEVATION (SECTIONS)

SECTION 8—RESOLUTION OF SAFE SHUTDOWN EVALUATION PROBLEM AREAS

8.1 ALTERNATIVE SHUTDOWN CAPABILITY

In order to assess compliance with the requirements of Branch Technical Position CMEB 9.5-1, maximum credit was taken for alternative shutdown capability with the functional flexibility of Millstone 3 system design. The alternative shutdown methods are summarized below:

Function	Alternative Method A	Alternative Method B
Reactor Coolant Letdown	Normal Letdown Path	Reactor Head Vent
Auxiliary Feedwater Injection	Motor-Driven Pump(s)	Turbine-Driven Pump
Steam Release (Decay Heat Removal)	Atmospheric Dump Valves	Code Safety Valves
Boration	Charging Pumps from Boric Acid Tank or RWST	High-Head Safety Injection Pump from RWST
Reactor Coolant System Pressure Control	Auxiliary Spray Line	Pressurizer Power Operated Relief Valves

The methods are described in Section 6.2 and in more detail in the MP3 BTP 9.5-1 Compliance Report.

8.2 LONG-TERM HOT SHUTDOWN

To maintain secondary heat sink, the auxiliary feedwater system supplies water to the steam generators. This allows removal of heat from the reactor coolant system. Refer to the MP3 BTP 9.5-1 Compliance Report for Details.

8.3 CONTROL SYSTEM ISOLATION FOR CONTROL ROOM/SPREADING ROOM/IRR FIRES

In evaluating the consequences of fires in the control room, instrument rack room, and cable spreading room, it was determined to be necessary to add a controls system to transfer signals from the affected areas to the switchgear rooms. The control system, along with certain manual actions, allows the plant to be brought to cold shutdown without the use of the control room, instrument rack room, or cable spreading room. A summary of these additions follows:

1. A new fire transfer panel, located in the orange emergency switchgear room, is provided. This panel contains the required number of control transfer switches, power supplies, and signal conditioning electronics required for safe shutdown of

the plant. Parallel control power fuses are provided and inserted into the circuit upon transfer switch actuation.

The transfer switch function is to disassociate the ASP controls and indicators from their normal support components, which may be lost by fire, and replace those signals with signals from the new transmitters. Block diagrams of transfer schemes are provided on Figures 8-1 and 8-2.

2. Additional instrumentation for monitoring plant process variables is provided. These include six pressure transmitters, five level transmitters, four flow transmitters, two neutron sensors, neutron flux processing racks, and four temperature transmitters.

Two environmentally qualified neutron detectors are installed in the spare wells in the neutron shield tank. Two qualified electronic channels are installed and powered from a vital instrument bus.

- 3. Key lock control switches at the local motor control centers are added for the following: 3HVC*ACU3A,B and 4A,B. These are provided for local administrative controls at the MCCs in the event of fire in the main control room. Parallel control power fuses are provided.
- 4. Diesel generator control circuits have been modified to provide adequate isolation and control from the local control panel. Parallel control power fuses are required.
- 5. Adequate isolation and control has been provided at the switchgear area for all 4,160 V loads.
- 6. Local manual breaker control is available for all major distribution breakers.

8.4 FIRE PROTECTION OF CABLE

As the safe shutdown functions were evaluated, cabling which supplied power to all required components was also considered (e.g., motor valves and equipment). The cables routed inside containment for 3FPW*CTV49 are protected by the use of fire rated cable.

8.5 AUXILIARY BUILDING ELEVATION 24 FEET 6 INCHES

Major components of the two systems considered in the safe shutdown evaluation are located at auxiliary building elevation 24 feet 6 inches. These are the three charging pumps (CHS) and the three component cooling pumps (CCP).

Normally, both of these systems supply cooling water to the reactor coolant pump seals during the hot shutdown period. However, only one source of cooling is needed when the pumps are not in operation. In addition, CCP is required for cold shutdown to remove heat from the residual heat
removal system. Because these systems are within the same fire area, Millstone 3 has installed automatic suppression and detection in this area.

The CCP pumps are approximately 60 feet from the charging pump cubicle. In addition to this separation, manual hose stations are located throughout the area at elevation 24 feet 6 inches. If all of the component cooling water pumps were damaged, Millstone 3 has the on site capability to repair a train of component cooling within 72 hours. These precautions and modifications strengthen the position that both the charging pumps and the component cooling pumps are not simultaneously damaged by a fire. Portable ventilation will be provided to cool the CCP pumps should all auxiliary building ventilation be lost.

8.6 REACTOR CONTAINMENT

Although the design of Millstone 3 containment does not meet the guidelines of BTP CMEB 9.5-1, sufficient design features exist to support a request for a deviation in the area, based upon the following consideration:

The Millstone containment structure is normally unmanned, and equipped with both fire detection and automatic water suppression. The automatic water suppression system provides protection and separation for the electrical penetration area. The reactor coolant pumps are equipped with a seismic oil collection system which is capable of collecting the entire reactor coolant pump motor lubrication system oil volume. Additional suppression is provided by fire hose stations and portable fire extinguishers. All electrical cables are fire resistant and pass the vertical flame test as prescribed by IEEE-383. Safety-related cables are train designated, with the redundant cables routed separately either in covered tray and/or enclosed conduit except at the below listed locations:

- 1. In-core thermocouple cable raceways above the Refueling Cavity.
- 2. The cable raceways at the Outer Annulus Electrical Penetration area.
- 3. The cable trays located in the Pressurizer Cubicle below the 51 foot elevation floor area.

Strategically located cable tray fire breaks are provided to prevent horizontal fire spread along cable trays. Separation of redundant tray and conduit is maintained throughout containment in accordance with Regulatory Guide 1.75, except as noted by deviation in Section 7.1.2.2.1 of the MPS-3 FSAR for the In-Core thermocouple raceways.

It has been concluded that the above described protection features meet the guidelines of BTP CMEB 9.5-1.







FPER FIGURE: 8-2 PROCESS INSTRUMENTATION TRANSFER SCHEME

NOTES:

- 1. NEW NONSAFETY, SEISMIC TRANSMITTER.
- 2. NEW NONSAFETY, SEISMIC LOOP POWER SUPPLY AND SIGNAL CONDITIONING CARDS.
- 3. PLUG CONNECTION TO SELECT SIGNAL FROM WESTINGHOUSE RACK OR NEW TRANSMITTER LOOP.
- 4. NEW INSTRUMENTATION WILL BE EQUIVALANT TO EXISTING PARALLEL INSTRUMENTATION BUT WITHOUT ENVIRONMENTAL QUALIFICATION.
- 5. SAFETY RELATED POWER SUPPLY IS USED FOR THE NONSAFETY PATH BECAUSE OF A LACK OF PHYSICAL SEPARATION IN THE TRANSFER SWITCH AND OPERABLE WITHOUT OFFSITE POWER.

SECTION 9—OPERATOR ACTIONS REQUIRED FOLLOWING A FIRE

9.1 OPERATOR GUIDELINES

Following a fire, equipment normally used to bring the plant down to cold shutdown conditions may be inoperable. All manual actions required by the fire are addressed in the station emergency shutdown procedures.

9.2 REPAIR OF EQUIPMENT

After a fire, some equipment may have to be repaired before achieving and maintaining cold shutdown. The safe shutdown evaluation concluded that there is only one area of the Millstone 3 plant where any major repairs could be required. This would occur if all three of the component coolant water pumps were damaged by fire in Area AB-1, Auxiliary Building, elevation 24 feet 6 inches.

The Millstone 3 plant has the capability to repair or replace one pump motor in either train of component cooling water using on site material (e.g., spare motor and cables) and still achieve cold shutdown conditions within 72 hours of reactor trip using only on site power. This capability allows Millstone 3 to fully comply with Position C.5.b.(1)(b) of BTP CMEB 9.5-1. Other minor repairs can be accomplished well within the 72 hour requirement. No repairs are necessary to achieve hot standby or hot shutdown.

Refer to MP3 BTP 9.5-1 for specific details.

TABLE 9–1 PLANT FUNCTIONS WHICH COULD BE AFFECTED BY AFIRE IN DIFFERENT FIRE AREAS AND OPTIONS AVAILABLE TOCOMPLETE FUNCTION (DELETED)

This table has been deleted.

SECTION 10—CONCLUSIONS

The Fire Hazards Analysis (Section 5) has been updated to reflect design modifications. Appendix B of this report demonstrates that the Applicant complies with Branch Technical Position CMEB 9.5-1.

The FPER/FSAR section describes the methods of compliance with the provisions of BTP CMEB 9.5-1. Appendix C of this report indicates the section of BTP CMEB 9.5-1 in which each item of 10 CFR 50, Appendix R is addressed. Various modifications have been made as a result of BTP CMEB 9.5-1 as stated in Section 8.

Also, Section 8 describes how the guidelines of BTP CMEB 9.5-1 relating to fires inside containment are met.

APPENDIX A—SUMMARY OF COMPLIANCE WITH BRANCH TECHNICAL POSITION APCSB 9.5-1, APPENDIX A (JULY 1, 1976)

This appendix has been deleted.

The review of all positions previously addressed in Appendix A is included in Appendix B. Appendix B provides a comparison of the Millstone 3 plant design with Branch Technical Position CMEB 9.5-1 (NUREG-0800, July 1981).

APPENDIX B—COMPARISON OF MILLSTONE 3 PLANT DESIGN TO BRANCH TECHNICAL POSITION CMEB 9.5-1 GUIDELINES (NUREG 0800, JULY 1981)

C.1. FIRE PROTECTION PROGRAM REQUIREMENTS

C.1.a. Fire Protection Program

POSITION C.1.a

A fire protection program should be established at each nuclear power plant. The program should establish the fire protection policy for the protection of structures, systems, and components important to safety at each plant and the procedures, equipment, and personnel required to implement the program at the plant site.

- (1) The fire protection program should be under the direction of an individual who has been delegated authority commensurate with the responsibilities of the position and who has available staff personnel knowledgeable in both fire protection and nuclear safety.
- (2) The fire protection program should extend the concept of defense-in-depth to fire protection in fire areas important to safety, with the following objectives:
 - to prevent fires from starting;
 - to detect rapidly, control, and extinguish promptly those fires that do occur;
 - to provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities does not prevent the safe shutdown of the plant.
- (3) Responsibility for the overall fire protection program should be assigned to a person who has management control over all organizations involved in fire protection activities. Formulation and assurance of program implementation may be delegated to a staff composed of personnel prepared by training and experience in fire protection and personnel prepared by training and experience in nuclear plant safety to provide a balanced approach in directing the fire protection program for the nuclear power plant.

The staff should be responsible for:

- (a) Fire protection program requirements, including consideration of potential hazards associated with postulated fires, with knowledge of building layout and systems design.
- (b) Post-fire shutdown capability.

- (c) Design, maintenance, surveillance, and quality assurance of all fire protection features (e.g., detection systems, suppression systems, barriers, dampers, doors, penetration seals, and fire brigade equipment).
- (d) Fire prevention activities (administrative controls and training).
- (e) Fire brigade organization and training.
- (f) Prefire planning.
- (4) The organizational responsibilities and lines of communication pertaining to fire protection should be defined between the various positions through the use of organizational charts and functional descriptions of each position's responsibilities. The following positions/organizations should be designated:
 - (a) The upper level off site management position which has management responsibility for the formulation, implementation, and assessment of the effectiveness of the nuclear plant fire protection program.
 - (b) The off site management position(s) directly responsible for formulating, implementing, and periodically assessing the effectiveness of the fire protection program for the licensee's nuclear power plant including fire drills and training conducted by the fire brigade and plant personnel. The results of these assessments should be reported to the upper level management position responsible for fire protection with recommendations for improvements or corrective actions as deemed necessary.
 - (c) The on site management position responsible for the overall administration of the plant operations and emergency plans which include the fire protection and prevention program and which provide a single point of control and contact for all contingencies.
 - (d) The on site position(s) which:
 - i. Implements periodic inspections to: minimize the amount of combustibles in safety-related areas; determine the effectiveness of housekeeping practices; assure the availability and acceptable condition of all fire protection systems/equipment, emergency breathing apparatus, emergency lighting, communication equipment, fire stops, penetration seals, and fire retardant coatings; and assures the prompt and effective corrective actions are taken to correct conditions adverse to fire protection and preclude their recurrence.
 - ii. Is responsible for the fire fighting training for operating plant personnel and the plant's fire brigade; design and selection of equipment; periodic inspection and testing of fire protection systems and equipment in

accordance with established procedures, and evaluate test results and determine the acceptability of the systems under test.

- iii. Assists in the critique of all fire drills to determine how well the training objectives have been met.
- iv. Reviews and evaluates proposed work activities to identify potential transient fire loads.
- v. Implements a program for indoctrination of all plant contractor personnel in appropriate administrative procedures which implement the fire protection program, and the emergency procedures relative to fire protection.
- vi. Implements a program for instruction of personnel on the proper handling of accidental events such as leaks or spills of flammable materials that are related to fire protection.
- (e) The on site position responsible for fire protection quality assurance. This position should be responsible for assuring the effective implementation of the fire protection program by planned inspections, scheduled audits, and verification that the results of these inspections of audits are promptly reported to cognizant management personnel.
- (f) The positions which are part of the plant fire brigade:
 - i. The plant fire brigade positions should be responsible for fighting fires. The authority and responsibility of each fire brigade position relative to fire protection should be clearly defined.
 - ii. The responsibilities of each fire brigade position should correspond with the actions required by the fire fighting procedures.
 - iii. The responsibilities of the fire brigade members under normal plant conditions should not conflict with their responsibilities during a fire emergency.
 - iv. The minimum number of trained fire brigade members available on site for each operating shift should be consistent with the activities required to combat the most significant fire. The size of the fire brigade should be based upon the functions required to fight fires with adequate allowance for injuries.
 - v. The recommendations for organization, training, and equipment of "Private Fire Brigades" as specified in NFPA No. 27-1975, including the applicable NFPA publications listed in the appendix to NFPA No. 27, are considered

appropriate criteria for organizing, training, and operating a plant fire brigade.

- (5) Personnel Qualifications
 - (a) The position responsible for formulation and implementation of the fire protection program (FPP) should have within his organization or as a consultant a fire protection engineer who is a graduate of an engineering curriculum of accepted standing and shall have completed not less than 6 years of engineering attainment indicative of growth in engineering competency and achievement, 3 years of which shall have been in responsible charge of fire protection engineering work. These requirements are the eligibility requirements as a Member in the Society of Fire Protection Engineers.
 - (b) The fire brigade members' qualifications should include satisfactory completion of a physical examination for performing strenuous activity, and of the fire brigade training described in Position C.3.d.
 - (c) The personnel responsible for the maintenance and testing of the fire protection systems should be qualified by training and experience for such work.
 - (d) The personnel responsible for the training of the fire brigade should be qualified by training and experience for such work.
- (6) The following NFPA publications should be used for guidance to develop the fire protection program:
 - No. 4 "Organization for Fire Services"
 - No. 4A "Organization of a Fire Department"
 - No. 6 "Industrial Fire Loss Prevention"
 - No. 7 "Management of Fire Emergencies"
 - No. 8 "Management Responsibilities for Effects of Fire on Operations"
 - No. 27 "Private Fire Brigades"
- (7) On sites where there is an operating reactor and construction or modification of other units is underway, the superintendent of the operating plant should have the lead responsibility for site fire protection.

RESPONSE C.1.a

The FPP is based on the guidelines of this position.

C.1.b. Fire Hazards Analysis

POSITION C.1.b

The fire hazards analysis demonstrates that the plant can maintain the ability to perform safe shutdown functions and minimize radioactive releases to the environment in the event of a fire.

The fire hazards analysis should be performed by qualified fire protection and reactor systems engineers to (1) consider potential in situ and transient fire hazards; (2) determine the consequences of fire in any location in the plant on the ability to safely shut down the reactor or on the ability to minimize and control the release of radioactivity to the environment; and (3) specify measures for fire prevention, fire detection, fire suppression, and fire containment and alternative shutdown capability as required for each fire area containing structures, systems, and components important to safety that are in conformance with NRC guidelines and regulations.

"Worst case" fires need not be postulated to be simultaneous with non fire-related failures in safety systems, plant accidents, or the most severe natural phenomena.

On multiple-reactor sites, unrelated fires in two or more units need not be postulated to occur simultaneously. Fires involving facilities shared between units and fires due to man-made site-related events that have a reasonable probability of occurring and affecting more than one reactor unit (such as an aircraft crash) should be considered.

Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of design basis accidents under post-fire conditions does not per se impact public safety, the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of design basis accidents. Three levels of fire damage limits are established according to the safety function of the structure, system, or component:

Safety Function	Fire Damage Limits
Hot shutdown	One train of equipment necessary to achieve hot shutdown from either the control room or emergency control station(s) must be maintained free of fire damage by a single fire, including an exposure fire.
Cold shutdown	Both trains of equipment necessary to achieve cold shutdown may be damaged by a single fire, including an exposure fire, but damage must be limited so that at least one train can be repaired or made operable within 72 hours using on site capability.
Design basis accidents	Both trains of equipment necessary for mitigation of consequences following design basis accidents may be damaged by a single exposure fire.

The most stringent fire damage limit should apply for those systems that fall into more than one category. Redundant systems used to mitigate the consequences of other design basis accidents but not necessary for safe shutdown may be lost to a single exposure fire. However, protection is provided so that a fire within only one such system does not damage the redundant system.

The fire hazards analysis should separately identify hazards and provide appropriate protection in locations where safety-related losses can occur as a result of:

- (1) Concentrations of combustible contents, including transient fire loads due to combustibles expected to be used in normal operations such as refueling, maintenance, and modifications;
- (2) Continuity of combustible contents, furnishings, building materials, or combinations thereof in configurations conducive to fire spread;
- (3) Exposure fire, heat, smoke, or water exposure, including those that may necessitate evacuation from areas that are required to be attended for safe shutdown;
- (4) Fire in control rooms or other locations having critical safety-related functions;
- (5) Lack of adequate access or smoke removal facilities that impede fire extinguishment in safety-related areas;
- (6) Lack of explosion-prevent measures;
- (7) Loss of electric power or control circuits;
- (8) Inadvertent operation of fire suppression systems.

The fire hazards analysis should verify that the NRC fire protection program guidelines have been met. The analysis should list applicable elements of the program, with explanatory statements as needed to identify location, type of system, and design criteria. The analysis should identify and justify any deviations from the regulatory guidelines. Justification for deviations from the regulatory guidelines shows that an equivalent level of protection can be achieved. Deletion of a protective feature without compensating alternative protection measures is not acceptable, unless it is clearly demonstrated that the protective measure is not needed because of the design and arrangement of the particular plant.

RESPONSE C.1.b

A revised fire hazards analysis which addresses the issues noted in Position C.1.b is presented in Section 5 of this report.

C.1.c. Fire Suppression System Design Basis

POSITION 6.1C.1.c.(1) and (2)

- (1) Total reliance should not be placed on a single fire suppression system. Appropriate backup fire suppression capability should be provided.
- (2) A single active failure or a crack in a moderate-energy line (pipe) in the fire suppression system should not impair both the primary and backup fire suppression capability. For example, neither the failure of a fire pump, its power supply or controls, nor a crack in a moderate-energy line in the fire suppression system, should result in loss of function of both sprinkler and hose standpipe systems in an area protected by such primary and backup systems.

RESPONSE C.1.c.(1) and (2)

- (1) In <u>every</u> safe shutdown fire area or other areas which expose safe shutdown areas, there is not a total reliance on a single suppression system or method. As a minimum, two suppression methods are available in the form of either fixed suppression system or fire brigade suppression using manual hose streams or portable extinguishers.
- (2) The loss of any fire protection system does not affect the function of the back-up manual suppression systems.

POSITION C.1.c.(3)

As a minimum, the fire suppression system should be capable of delivering water to manual hose stations located within hose reach of areas containing equipment required for safe plant shutdown following the safe shutdown earthquake (SSE). In areas of high seismic activity, the staff will consider on a case-by-case basis the need to design the fire detection and suppression systems to be functional following the SSE.

RESPONSE C.1.c.(3)

All safe shutdown areas of the plant are provided with hose stream coverage for use by the plant fire brigade. Refer to the Fire Protection Evaluation Report (FPER), Section 5, for specific information for any fire area. Millstone 3 is not required to provide seismically designed hose station/standpipe systems. A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11769, dated October 7, 1985-Docket No. 50-423) regarding plant location that could not be reached a maximum of 100 feet of fire hose from standpipe system(s), and provides anticipated required hose length and supporting calculations to confirm that no significant hydraulic degradation will occur. A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11760, dated October 1, 1985-Docket No. 50-423) regarding design of combined standpipe/suppression systems.

POSITION C.1.c.(4)

The fire protection systems should retain their original design capability for (a) natural phenomena of less severity and greater frequency than the most severe natural phenomena (approximately once in 10 years) such as tornadoes, hurricanes, floods, ice storms, or small-intensity earthquakes that are characteristic of the geographic region, and (b) potential man-made site-related events such as oil barge collisions or aircraft crashes that have a reasonable probability of occurring at a specific plant site. The effects of lightning strikes should be included in the overall plant fire protection program.

RESPONSE C.1.c.(4)

The fire protection systems at Millstone 3 comply with this position, except as noted in response to position C.1.c(3).

POSITION C.1.c.(5)

The consequences of inadvertent operation of or a crack in a moderate energy line in the fire suppression system should meet the guidelines specified for moderate-energy systems outside containment in SRP Section 3.6.1.

RESPONSE C.1.c.(5)

The inadvertent operation evaluation is being conducted at this time.

POSITION C.1.d

Alternative or dedicated shutdown capability should be provided where the protection of systems whose functions are required for safe shutdown is not provided by established fire suppression methods or by Position C.5.b.

RESPONSE C.1.d

Alternative shutdown capability is provided.

POSITION C.1.e.(1) (2) and (3)

- (1) The fire protection program (plans, personnel, and equipment) for buildings storing new reactor fuel and for adjacent fire areas that could affect the fuel storage area should be fully operational before fuel is received at the site. Such adjacent areas include those whose flames, hot gases, and fire-generated toxic and corrosive products may jeopardize safety and surveillance of the stored fuel.
- (2) The fire protection program for an entire reactor unit should be fully operational prior to initial fuel loading in that reactor unit.

(3) On reactor sites where there is an operating reactor and construction or modification of other units is under way, the fire protection program should provide for continuing evaluation of fire hazards. Additional fire barriers, fire protection capability, and administrative controls should be provided as necessary to protect the operating unit from construction fire hazards.

RESPONSE C.1.e.(1) (2) and (3)

The fire protection program has been developed and is implemented in accordance with the requirements of Position C.1.e.(1) (2) and (3).

C.2. ADMINISTRATIVE CONTROLS

POSITION C.2.

Administrative controls should be used to maintain the performance of the fire protective system and personnel. These controls should establish procedures to:

- a. Prohibit bulk storage of combustible materials inside or adjacent to safety-related buildings or systems during operation or maintenance periods. Regulatory Guide 1.39 provides guidance on housekeeping, including the disposal or combustible materials.
- b. Govern the handling and limitation of the use of ordinary combustible materials, combustible and flammable gases and liquids, high efficiency particulate air and charcoal filters, dry ion exchange resins, or other combustible supplies in safety-related areas.
- c. Govern the handling of and limit transient fire loads such as combustible and flammable liquids, wood and plastic products, or other combustible materials in buildings containing safety-related systems or equipment during all phases of operating, and especially during maintenance, modification, or refueling operations.
- d. Designate the on site staff member responsible for the in-plant fire protection review of proposed work activities to identify potential transient fire hazards and specify required additional fire protection in the work activity procedure.
- e. Govern the use of ignition sources by use of a flame permit system to control welding, flame cutting, brazing, or soldering operations. A separate permit should be issued for each area where work is to be done. If work continues over more than one shift, the permit should be valid for not more than 24 hours when the plant is operating or for the duration of a particular job during plant shutdown.
- f. Control the removal from the area of all waste, debris, scrap, oil spills, or other combustibles resulting from the work activity immediately following completion of the activity, or at the end of each work shift, whichever comes first.

- g. Govern leak testing; similar procedures such as airflow determination should use one of the commercially available techniques. Open flames or combustion-generated smoke should not be permitted.
- h. Maintain the periodic housekeeping inspections to ensure continued compliance with these administrative controls.
- Control the use of specific combustibles in safety-related areas. All wood used in safety-related areas during maintenance, modification, or refueling operation (such as lay-down blocks or scaffolding) should be treated with a flame retardant. Equipment or supplies (such as new fuel) shipped in untreated combustible packing containers may be unpacked in safety-related areas if required for valid operating reasons. However, all combustible materials should be removed from the area immediately following unpacking. Such transient combustible material, unless stored in approved containers, should not be left unattended during lunch breaks, shift changes, or other similar periods. Loose combustible packing material such as wood or paper excelsior, or polyethylene sheeting should be placed in metal containers with tight-fitting self-closing metal covers.
- j. Disarming of fire detection or fire suppression systems should be controlled by a permit system. Fire watches should be established in areas where systems are so disarmed.
- k. Successful fire protection requires testing and maintenance of the fire protection equipment and the emergency lighting and communication. A test plan that lists the individuals and their responsibilities in connection with routine tests and inspections of the fire detection and protection systems should be developed. The test plan should contain the types, frequency, and detailed procedures for testing. Procedures should also contain instructions on maintaining fire protection during those periods when the fire protection system is impaired or during periods of plant maintenance, e.g., fire watches or temporary hose connections to water systems.
- 1. Control actions to be taken by an individual discovering a fire, for example, notification of control room, attempt to extinguish fire, and actuation of local fire suppression systems.
- m. Control actions to be taken by the control room operator to determine the need for brigade assistance upon report of a fire or receipt of alarm on control room annunciator panel, for example, announcing location of fire over PA system, sounding fire alarms, and notifying the shift supervisor and the fire brigade leader of the type, size, and location of the fire.
- n. Control actions to be taken by the fire brigade after notification by the control room operator of a fire, for example, assembling in a designated location, receiving directions from the fire brigade leader, and discharging specific fire fighting responsibilities, including selection and transportation of fire fighting equipment to fire location, selection of protective equipment, operating instructions for use of fire suppression systems, and use of preplanned strategies for fighting fires in specific areas.

- o. Define the strategies for fighting fires in all safety-related areas and areas presenting a hazard to safety-related equipment. These strategies should designate:
 - (1) Fire hazards in each area covered by the specific prefire plans.
 - (2) Fire extinguishants best suited for controlling the fires associated with the fire hazards in that area and the nearest location of these extinguishants.
 - (3) Most favorable direction from which to attack a fire in each area in view of the ventilation direction, access hallways, stairs, and doors that are most likely to be free of fire, and the best station or elevation for fighting the fire. All access and egress routes that involve locked doors should be specifically identified in the procedure with the appropriate precautions and methods for access specified.
 - (4) Plant systems that should be managed to reduce the damage potential during a local fire and the location of local and remote controls for such management (e.g., any hydraulic or electrical systems in the zone covered by the specific fire fighting procedures that could increase the hazards in the area because of overpressurization or electrical hazards).
 - (5) Vital heat-sensitive system components that need to be kept cool while fighting a local fire. Particularly hazardous combustibles that need cooling should be designated.
 - (6) Organization of fire fighting brigades and the assignment of special duties according to job titles so that all fire fighting functions are covered by any complete shift personnel complement. These duties include command control of the brigade, transporting fire suppression and support equipment to the fire scenes, applying the suppressant to the fire, communication with the control room, and coordination with outside fire departments.
 - (7) Potential radiological and toxic hazards in fire zones.
 - (8) Ventilation system operation that ensures desired plant air distribution when the ventilation flow is modified for fire containment or smoke clearing operation.
 - (9) Operations requiring control room and shift engineer coordination or authorization.
 - (10) Instructions for plant operators and general plant personnel during fire.

RESPONSE C.2.

Administrative control procedures exist for Millstone Nuclear Power Station Units 1 and 2.

Alternate approaches providing equivalent protection for administrative control requirements are as follows:

C.2.d and e

As part of the work control process, Millstone Station uses a permit system in concert with maintenance requests/work orders. All maintenance requests/work orders are reviewed and approved by responsible foremen, supervisors, or designees, which have received indoctrination on fire protection/prevention during plant staff training. The Site Fire Marshal reviews and processes ignition source and combustible and flammable material permits, as needed, to support maintenance and work activities.

C.2.o.

In regards to fire fighting procedures as outlined in Section C.2, Millstone Station believes that the development of specific fire fighting procedures is not realistic because various combinations of fire situations could develop and specific procedures would actually restrict fire fighting by reducing flexibility.

Fire fighting strategies for safety-related areas are presented to the fire brigade members during the classroom portion of the Fire Brigade Training Program. This includes an active discussion between fire brigade leaders, fire brigade members, and classroom instructor on the best possible approaches and methods for fighting various types of fires in specific safety-related areas.

C.3. FIRE BRIGADE

POSITION C.3.

- a. The need for good organization, training, and equipping of fire brigades at nuclear power plant sites requires that effective measures be implemented to ensure proper discharge of these functions. The guidance in Regulatory Guide 1.101, "Emergency Planning for Nuclear Power Plants," should be followed as applicable.
- b. A site fire brigade trained and equipped for fire fighting should be established to ensure adequate manual fire fighting capability for all areas of the plant containing structures, systems, or components important to safety. The fire brigade should be at least five members on each shift. The brigade leader and at least two brigade members should have sufficient training in or knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on safe shutdown capability. The qualification of fire brigade members should include an annual physical examination to determine their ability to perform strenuous fire fighting activities. The shift supervisor should not be a member of the fire brigade. The brigade leader shall be competent to assess the potential safety consequences of a fire and advise control room personnel. Such competence by the brigade leader may be evidenced by possession of an operator's license or equivalent knowledge of plant safety-related systems.

c. The minimum equipment provided for the brigade should consist of personal protective equipment such as turnout coats, boots, gloves, hard hats, emergency communications equipment, portable lights, portable ventilation equipment, and portable extinguishers. Self-contained breathing apparatus using full-face positive-pressure masks approved by NIOSH (National Institute for Occupational Safety and Health - approval formerly given by the U.S. Bureau of Mines) should be provided for fire brigade, damage control, and control room personnel. At least 10 masks shall be available for fire brigade personnel. Control room personnel may be furnished breathing air by a manifold system piped from a storage reservoir if practical. Service or rated operating life shall be a minimum of one-half hour for the self-contained units.

At least two extra air bottles should be located on site for each self-contained breathing unit. In addition, an on site six hour supply of reserve air should be provided and arranged to permit quick and complete replenishment of exhausted supply air bottles as they are returned. If compressors are used as a source of breathing air, only units approved for breathing air shall be used; compressors shall be operable assuming a loss of off site power. Special care must be taken to locate the compressor in areas free of dust and contaminants.

- d. The fire brigade training program shall ensure that the capability to fight potential fires is established and maintained. The program shall consist of an initial classroom instruction program followed by periodic classroom instruction, fire fighting practice, and fire drills.
 - (1) The initial classroom instruction should include:
 - (a) Indoctrination of the plant fire fighting plan with specific identification of each individual's responsibilities.
 - (b) Identification of the type and location of fire hazards and associated types of fires that could occur in the plant.
 - (c) The toxic and corrosive characteristics of expected products of combustion.
 - (d) Identification of the location of fire fighting equipment for each fire area and familiarization with the layout of the plant, including access and egress routes to each area.
 - (e) The proper use of available fire fighting equipment and the corrective method of fighting each type of fire. The types of fires covered should include fires in energized electrical equipment, fires in cables and cable trays, hydrogen fires, fires involving flammable and combustible liquids or hazardous process chemicals, fires resulting from construction or modification (welding), and record file fires.

- (f) The proper use of communication, lighting, ventilation, and emergency breathing equipment.
- (g) The proper method for fighting fires inside buildings and confined spaces.
- (h) The direction and coordination of the fire fighting activities (fire brigade leaders only).
- (i) Detailed review of fire fighting strategies and procedures.
- (j) Review of the latest plant modifications and corresponding changes in fire fighting plans.
- (k) Training of the plant fire brigade should be coordinated with the local fire department so that responsibilities and duties are delineated in advance. This coordination should be part of the training course and should be included in the training of the local fire department staff.
- (1) Local fire departments should be provided training in operational precautions when fighting fires on nuclear power plant sites and should be made aware of the need for radiological protection of personnel and the special hazards associated with a nuclear power plant site.
 - Note: Items (i) and (j) may be deleted from the training of no more than two of the non operations personnel who may be assigned to the fire brigade.
- (2) The instruction should be provided by qualified individuals who are knowledgeable, experienced, and suitably trained in fighting the types of fires that could occur in the plant and in using the types of equipment available in the nuclear power plant.
- (3) Instruction should be provided to all fire brigade members and fire brigade leaders.
- (4) Regular planned meetings should be held at least every 3 months for all brigade members to review changes in the fire protection program and other subjects as necessary.
- (5) Periodic refresher training sessions shall be held to repeat the classroom instruction program for all brigade members over a two year period. These sessions may be concurrent with the regular planned meetings.
- (6) Practice
 - (a) Practice sessions should be held for each shift fire brigade on the proper method of fighting the various types of fires that could occur in a nuclear

power plant. These sessions shall provide brigade members with experience in actual fire extinguishment and the use of emergency breathing apparatus under strenuous conditions encountered in fire fighting.

- (b) These practice sessions should be provided at least once per year for each fire brigade member.
- (7) Drills
 - (a) Fire brigade drills should be performed in the plant so that the fire brigade can practice as a team.
 - (b) Drills should be performed at regular intervals not to exceed 3 months for each shift fire brigade. Each fire brigade member should participate in each drill, but must participate in at least two drills per year.

A sufficient number of these drills, but not less than one for each shift, fire brigade per year, should be unannounced to determine the fire fighting readiness of the plant fire brigade, brigade leader, and fire protection systems and equipment. Persons planning and authorizing an unannounced drill should ensure that the responding shift fire brigade members are not aware that a drill is being planned until it is begun. Unannounced drills should not be scheduled closer than 4 weeks.

At least one drill per year should be performed on a "back shift" for each shift fire brigade.

(c) The drills should be preplanned to establish the training objectives of the drill and should be critiqued to determine how well the training objectives have been met. Unannounced drills should be planned and critiqued by members of the management staff responsible for plant safety and fire protection. Performance deficiencies of a fire brigade or of individual fire brigade members should be remedied by scheduling additional training for the brigade or members.

Unsatisfactory drill performance should be followed by a repeat drill within 30 days.

- (d) These drills should provide for local fire department participation periodically (at least annually).
- (e) At three year intervals, a randomly selected unannounced drill should be critiqued by qualified individuals independent of the licensee's staff. A copy of the written report from such individuals should be available for NRC review.

- (f) Drills should as a minimum include the following:
 - i. Assessment of fire alarm effectiveness, time required to notify and assemble fire brigade, and selection, placement, and use of equipment and fire fighting strategies.
 - ii. Assessment of each brigade member's knowledge of his or her role in the fire fighting strategy for the area assumed to contain the fire. Assessment of the brigade members' conformance with established plant fire fighting procedures and use of fire fighting equipment, including self-contained emergency breathing apparatus, communication equipment, and ventilation equipment, to the extent practicable.
 - iii. The simulated use of fire fighting equipment required to cope with the situation and type of fire selected for the drill. The area and type of fire chosen for the drill should differ from those used in the previous drills so that brigade members are trained in fighting fires in various plant areas. The situation selected should simulate the size and arrangement of a fire that could reasonably occur in the area selected, allowing for fire development due to the time required to respond, to obtain equipment, and organize for the fire, assuming loss of automatic suppression capability.
 - iv. Assessment of brigade leader's direction of the fire fighting effort as to thoroughness, accuracy, and effectiveness.
- (8) Records

Individual records of training provided to each fire brigade member, including drill critiques, should be maintained for at least 3 years to ensure that each member receives training in all parts of the training program. These records of training should be available for NRC review. Retraining or broadened training for fire fighting within buildings should be scheduled for all those brigade members whose performance records show deficiencies.

(9) Guidance Documents

NFPA 27, "Private Fire Brigade," should be followed in organization, training, and fire drills. This standard also is applicable for the inspection and maintenance of fire fighting equipment. Among the standards referenced in this document, NFPA 197, "Training Standard on Initial Fire Attacks," should be utilized as applicable. NFPA booklets and pamphlets listed in NFPA 27 may be used as applicable for training references. In addition, courses in fire prevention and fire suppression that are recognized or sponsored by the fire protection industry should be utilized.

RESPONSE C.3

A site fire brigade is established for Millstone Station. A minimum five man brigade is available at all times.

MP3 has a minimum of 12 sets of self-contained breathing apparatus (SCBA) and a minimum of 24 SCBA spare cylinders for Fire Brigade Use (not including those for Control Room use). Additional SCBA and spare cylinders are available at Units 1 and 2 for makeup of the 6 hours back-up air supply. Additional off-site air supplies can be expected from the Town Fire Departments. Recharge capability is available via the Town Fire Department or the Millstone Fire Training facility on-site air compressor or both.

C.4. QUALITY ASSURANCE PROGRAM

POSITION C.4.

The quality assurance (QA) programs of applicants and contractors should ensure that the guidelines for design, procurement, installation, and testing and the administrative controls for the fire protection systems for safety-related areas are satisfied. The QA program should be under the management control of the QA organization. This control consists of (1) formulating a fire protection QA program that incorporates suitable requirements and is acceptable to the management responsible for fire protection or verifying that the program incorporates suitable requirements and is acceptable to the management responsible for fire protection through review, surveillance, and audits. Performance of other QA program functions for meeting the fire protection program for fire protection should be part of the overall plant QA program. It should satisfy the specific criteria listed below.

C.4.a. Design And Procurement Document Control

POSITION C.4.a.

Measures should be established to ensure that the guidelines of the regulatory position of this guide are included in design and procurement documents and that deviations therefrom are controlled.

C.4.b. Instructions, Procedures, and Drawings

POSITION C.4.b.

Inspections, tests, administrative controls, fire drills, and training that govern the fire protection program should be prescribed by documented instructions, procedures, or drawings and should be accomplished in accordance with these documents.

C.4.c. Control of Purchased Material, Equipment, and Services

Measures should be established to ensure that purchased material, equipment, and services conform to the procurement documents.

C.4.d. Inspection

POSITION C.4.d.

A program for independent inspection of activities affecting fire protection should be established and executed by or for the organization performing the activity to verify conformance with documented installation drawings and test procedures for accomplishing the activities.

C.4.e. Test and Test Control

POSITION C.4.e.

A test program should be established and implemented to ensure that testing is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. The tests should be performed in accordance with written test procedures; test results should be properly evaluated and acted on.

C.4.f. Inspection, Test, and Operating Status

POSITION C.4.f.

Measures should be established to provide for the identification of items that have satisfactorily passed required tests and inspections.

C.4.g Nonconforming Items

POSITION C.4.g.

Measures should be established to control items that do not conform to specified requirements to prevent inadvertent use or installation.

C.4.h. Corrective Action

POSITION C.4.h.

Measures should be established to ensure that conditions adverse to fire protection, such as failures, malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material and non-conformances, are promptly identified, reported, and corrected.

C.4.i. Records

POSITION C.4.i.

Records should be prepared and maintained to furnish evidence that the criteria enumerated above are being met for activities affecting the fire protection program.

C.4.j. Audits

POSITION C.4.j.

Audits should be conducted and documented to verify compliance with the fire protection program, including design and procurement documents, instructions, procedures and drawings, and inspection and test activities.

RESPONSE C.4.a through C.4.j

In response to the above positions, Northeast Utilities (NU) has established a fire protection program which ensures positive attention in all aspects of nuclear power plant fire protection. Corporate policies, established within NU's fire protection program, are responsive to BTP CMEB 9.5-1, establishing the fire prevention and protection requirements for all NU nuclear power plants. Included in the fire protection program is a Quality Assurance (QA) Program which addresses BTP CMEB 9.5-1, Section C.4 criteria. The QA program is under the management control of the QA organization.

The NU QAP Topical Report Quality Assurance Program, establishes the quality assurance requirements for NNECo. It is applicable to the design, procurement, installation, testing, and administrative controls for the Fire Protection Quality Assurance Program for safety-related areas, and is responsive to 10 criteria of 10CFR50, Appendix B, which are included in BTP CMEB 9.5-1, Section C.4.

In conclusion, it is NNECo's position that the criteria of BTP CMEB 9.5-1, Section C.4 have been met through an established fire protection program and applicable administrative control procedures.

C.5. GENERAL PLANT GUIDELINES

C.5.a. Building Design

POSITION C.5.a.(1)

Fire barriers with a minimum fire resistance rating of 3 hours should be provided to:

- (a) Separate safety-related systems from any potential fires in non safety-related areas that could affect their ability to perform their safety function;
- (b) Separate redundant divisions or trains of safety-related systems from each other so that both are not subject to damage from a single fire;

(c) Separate individual units on a multiple-unit site unless the requirements of General Design Criterion 5 are met with respect fires.

RESPONSE C.5.a.(1)

In response to Sections a and b (Section c is not applicable), NNECo has verified that those 3-hour fire-rated barriers provided to assure compliance with the above criteria have been constructed in accordance with designs qualified in accordance with the requirements of ASTM E119, Fire Tests of Building Construction and Materials, (NFPA-251).

Refer to FP-3, Qualification of Fire Barriers Deviation Request submittal, Docket No. 50-423, B11090, W. G. Counsil to B. J. Youngblood dated March 23, 1984, for further details.

Three-hour fire-rated barriers are provided to separate safe shutdown areas from potential fires in both safety- and nonsafety-related areas. All fire areas of the plant have been evaluated to determine if exposures exist to alternate shutdown method equipment and components within a single area. (For methodology, refer to MNPS-3 FPER, Section 6.) It has been determined that there are two areas within the plant where alternate shutdown redundant trains could be affected by a single fire. They are:

- Containment Structure electrical penetration area
- Auxiliary Building RPCCWP and charging pump area, elevation 24 feet-6 inches.

Both of the above areas have been formally identified to the NRC staff in the form of a deviation request (refer to Responses C.5.b.(2) and C.7.a.).

A deviation request has been submitted and transmitted to the NRC (E. J. Mroczka to B. J. Youngblood, Letter B11669, dated August 29, 1985 - Docket No. 50-423) regarding fireproofing of structural steel in Fire Areas CB-8, CB-9, CB-10, CB-11, and CB-12.

A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11658, dated August 16, 1985 - Docket No. 50-423) regarding fiberglass drain lines penetrating walls in Fire Areas ESF-7, ESF-9, ESF-10, and ESF-11.

POSITION C.5.a.(2)

Appropriate fire barriers should be provided within a single safety division to separate components that present a fire hazard to other safety-related components or high concentrations of safety-related cables within that division.

RESPONSE C.5.a.(2)

Barriers and/or automatic suppression systems have been provided to satisfy the above guideline. (For methodology, refer to Sections 5.1 through 5.5.)

POSITION C.5.a.(3)

Openings through fire barriers for pipe, conduit, and cable trays which separate fire areas should be sealed or closed to provide a fire resistance rating at least equal to that required of the barrier itself. Openings inside conduit larger than 4 inches in diameter should be sealed at the fire barrier penetration. Openings inside conduit 4 inches or less in diameter should be sealed at the fire barrier unless the conduit extends at least 5 feet on each side of the fire barrier and is sealed either at both ends or at the fire barrier with noncombustible material to prevent the passage of smoke and hot gases. Fire barrier penetrations that must maintain environmental isolation or pressure differentials should be qualified by test to maintain the barrier integrity under such conditions.

Penetration designs should utilize only noncombustible materials and should be qualified by tests. The penetration qualification tests should use the time-temperature exposure curve specified by ASTM E- 119, "Fire Test of Building Construction and Materials." The acceptance criteria for the test should require that:

- (a) The fire barrier penetration has withstood the fire endurance test without passage of flame or ignition of cables on the unexposed side for a period of time equivalent to the fire resistance rating required of the barrier.
- (b) The temperature levels recorded for the unexposed side are analyzed and demonstrate that the maximum temperature does not exceed 325°F.
- (c) The fire barrier penetration remains intact and does not allow projection of water beyond the unexposed surface during the hose stream test. The stream shall be delivered through a 1.5 inch nozzle set at a discharge angle of 30 percent with a nozzle pressure of 75 psi and a minimum discharge of 75 gpm with the tip of the nozzle a maximum of 5 ft from the exposed face; or the stream shall be delivered through a 1.5 inch nozzle set at a discharge angle of 15 percent with a nozzle pressure of 75 psi and a minimum discharge of 75 gpm with the tip of the nozzle a maximum of 10 ft from the exposed face; or the stream shall be delivered through a 2.5 inch National Standard playpipe equipped with 1 1/8-inch tip, nozzle pressure of 30 psi, located 20 feet from the exposed face.

RESPONSE C.5.a.(3)

Penetrations through fire area barriers are protected in accordance with the guidelines set forth in this position. A deviation request has been submitted and transmitted to the NRC

(E. J. Mroczka to B. J. Youngblood, Letter B11669, dated August 29, 1985 - Docket No. 50-423) regarding penetration seals testing and internal sealing of conduit.

A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11534, dated July 25, 1985 - Docket No. 50-423) regarding nonfire-tested electrical penetration assemblies in Fire Area RC-1.

A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11534, dated July 25, 1985 - Docket No. 50-423) regarding fiberglass drain line in 3-hour fire barriers for Fire Areas CSW-3 and CSW-4.

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11658, dated August 6, 1985 - Docket No. 50-423) regarding a 12 inch diameter fiberglass reinforced pipe in three hour fire barriers for Fire Areas ESF-7, ESF-9, ESF-10, and ESF-12.

POSITION C.5.a.(4)

Penetration openings for ventilation systems should be protected by fire dampers having a rating equivalent to that required of the barrier (see NFPA-90A, "Air Conditioning and Ventilating Systems"). Flexible air duct coupling in ventilation and filter systems should be noncombustible.

RESPONSE C.5.a.(4)

NNECo has verified that all ventilation systems penetrating fire barriers at Millstone 3 meet the guidelines of this section, except as follows:

- (a) The Supplemental Leak Collection Rate System (SLCRS) ductwork, which is routed through the Engineered Safety Features (ESF) Building and the Auxiliary Building, has two three-hour fire dampers and is enclosed in a one-hour fire-rated duct wrap, except for ESF-1 and ESF-5. Due to physical constraints, fire damper 44 (DMPF 44) is located away from the fire barrier. However, to ensure that the fire areas are segregated, all of the SLCRS ductwork between DMPF 44 and the fire barrier is wrapped with a one-hour fire-rated duct wrap. All of the SLCRS duct supports are coated with a cementitious fire-resistive material, which has an equivalent fire rating to the SLCRS duct wrap. For further information, refer to NCR 387-085, Disposition dated July 9, 1987.
- (b) Fire Damper 3HVR*DMPF-64 is located in the western-most portion of the north wall of ESF-5 (Terry Turbine Valve Room), and the south wall of ESF-1. 86-10 type evaluation FP-EV-00-0008, Technical Evaluation for the Acceptability of Removing Fire Damper 3HVR*DMPF-64 from the Fire Protection Program, Millstone Unit 3, addresses the damper inaccessibility (size of damper opening, 1" x 2", is too small) for test purposes, and the acceptability of the duct penetration remaining unsealed in a fire.

POSITION C.5.a.(5)

Door openings in fire barriers should be protected with equivalently rated doors, frames, and hardware that have been tested and approved by a nationally recognized laboratory. Such doors should be self-closing or provided with closing mechanisms and should be inspected semiannually to verify that automatic hold-open, release, and closing mechanisms and latches are operable. (See NFPA 80, "Fire Doors and Windows.")

One of the following measures should be provided to ensure they protect the opening as required in case of fire:

- (a) Fire doors should be kept closed and electrically supervised at a continuously manned location;
- (b) Fire doors should be locked closed and inspected weekly to verify that the doors are in the closed position;
- (c) Fire doors should be provided with automatic hold-open and release mechanisms and inspected daily to verify that doorways are free of obstructions; or
- (d) Fire doors should be kept closed and inspected daily to verify that they are in the closed position.

The fire brigade leader should have ready access to keys for any locked fire doors.

Areas protected by automatic total flooding gas suppression systems should have electrically supervised self-closing fire doors or should satisfy option (a) above.

RESPONSE C.5.a.(5)

Door openings in safe shutdown fire area barriers are provided with fire-rated doors, frames, and hardware which have been tested and approved by a nationally recognized laboratory.

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11760, dated October 1, 1985 - Docket No. 50-423) regarding fire door assemblies. This provides additional information on the construction/arrangement of plant fire doors to supplement previous deviation request submitted and transmitted to the NRC (W. C. Counsil to B. J. Youngblood, Letter B11478, dated April 2, 1985 - Docket No. 50-243) regarding fire door qualification.

Doors are electrically monitored, locked, or administratively controlled to ensure they protect the opening in the event of a fire.

A station surveillance procedure has been developed to govern an operability test of the automatic closing mechanisms and door catches.

All doors leading to vital CO_2 protected areas are normally closed and electrically supervised, with the exception of the two doors from the East and West switchgear rooms to the North and South electrical cable tunnels. These doors are key locked closed.

A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11534, dated July 25, 1985 - Docket No. 50-423) regarding the non fire-tested containment access hatch in Fire Area RC-1.

POSITION C.5.a.(6) and (7)

- (6) Personnel access routes and escape routes should be provided for each fire area. Stairwells outside primary containment serving as escape routes, access routes for firefighting, or access routes to areas containing equipment necessary for safe shutdown should be enclosed in masonry or concrete towers with a minimum fire rating of 2 hours and self-closing Class B fire doors.
- (7) Fire exit routes should be clearly marked.

RESPONSE C.5.a.(6) and (7)

Access and escape routes are provided for each fire area. Stairwells outside primary containment serving as access and egress routes are enclosed with fire barriers having two hour fire-ratings with 1.5 hour UL-labeled fire door assemblies at all openings into the stairwell. Fire exit routes are clearly marked with directional signs through interior areas and exit signs at egress doors.

POSITION C.5.a.(8)

Each cable spreading room should contain only one redundant safety division. Cable spreading rooms should not be shared between reactors. Cable spreading rooms should be separated from each other and from other areas of the plant by barriers having a minimum fire resistance of 3 hours.

RESPONSE C.5.a.(8)

The Millstone 3 cable spreading room contains both trains of safe shutdown/safety-related cable. The area is protected by a manually actuated total flood CO₂ suppression system. The single cable spreading room was utilized since alternate shutdown capabilities exist in a separate fire area. A letter has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Licensing Letter A04615, dated July 1, 1985 - Docket No. 50-423) regarding post-fire operator action and compliance with the concerns identified in IE Information Notice 85-09, "Isolation Transfer Switches and Post-Fire Shutdown Capability," and provisions of alternate fusing and reactor coolant cold leg temperature indication at the Auxiliary Shutdown Panel. A subsequent letter has been submitted to the NRC (J. F. Opeka to B. J. Youngblood, Licensing Letter B11759, dated October 1, 1985 - Docket No. 50-423) which identifies that the cold leg temperature indication at the Auxiliary Shutdown Panel is installed.

POSITION C.5.a.(9)

Interior wall and structural components, thermal insulation materials, radiation shielding materials, and soundproofing should be noncombustible. Interior finishes should be noncombustible.

Materials that are acceptable for use as interior finish without evidence of test and listing by a nationally recognized laboratory are the following:

- Plaster, acoustic plaster, gypsum plasterboard (gypsum wallboard), either plain, wallpapered, or painted with oil- or water-base paint;
- Ceramic tile, ceramic panels
- Glass, glass blocks;
- Brick, stone, concrete blocks, plain or painted;
- Steel and aluminum panels, plain, painted, or enameled;
- Vinyl tile, vinyl-asbestos tile, linoleum, or asphalt tile on concrete floors.

RESPONSE C.5.a.(9)

Interior wall and structural components are noncombustible. All thermal insulation weatherproofing is UL-listed and has a flame spread and smoke developed rating of not more than 25. Flame spread ratings is established in accordance with ASTM E-84 Test.

POSITION C.5.a.(10)

Metal deck roof construction should be noncombustible and listed as "acceptable for fire" in the UL Building Materials Directory, or listed as Class I in the Factory Mutual System Approval Guide.

RESPONSE C.5.a.(10)

Deviation request granted on this position. Refer to FP-6, Qualifications of Metal Roof Deck and Contents of Concealed Spaces, Docket No. 50-423, B11059, W. G. Counsil to B. J. Youngblood for details on this position.

POSITION C.5.a.(11)

Suspended ceiling and their supports should be of noncombustible construction. Concealed spaces should be devoid of combustibles except as noted in Position C.6.b.

RESPONSE C.5.a.(11)

Suspended ceilings have a flame spread rating of no more than 25 as defined by Federal Specification SS-5-118A and carry a UL label in accordance with ASTM E-84.

The only safety-related area of the plant where cable trays (combustible materials) are located above a false ceiling is in the Control Room immediately behind the Main Control Board. A deviation request for this area has been granted. Refer to FP-6, Qualification of Metal Roof Deck and Contents of Concealed Spaces Deviation Request submittal, Docket No. 50-423, B11059, W. G. Counsil to B. J. Youngblood dated March 9, 1984, for further details. A deviation request has

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been submitted and transmitted to the NRC (E. J. Mroczka to B. J. Youngblood, Letter B11669, dated August 29, 1985 - Docket No. 50-423) regarding concealed spaces in Fire Area CB-12 and Fire Area SB-4, Zone A.

POSITION C.5.a.(12)

Transformers installed inside fire areas containing safety-related systems should be of the dry type or insulated and cooled with noncombustible liquid. Transformers filled with combustible fluid that are located indoors should be enclosed in a transformer vault (see Section 450(c) of NFPA 70, "National Electrical Code").

RESPONSE C.5.a.(12)

All transformers installed inside of buildings are of the dry type.

POSITION C.5.a.(13)

Outdoor oil-filled transformers should have oil spill confinement features or drainage away from the buildings. Such transformers should be located at least 50 feet distant from the building, or by ensuring that such building walls within 50 feet of oil-filled transformers are without openings and have a fire resistance rating of at least 3 hours.

RESPONSE C.5.a.(13)

Oil-filled transformers are located more than 50 feet from buildings and are provided with moat-type construction to prevent the spread of oil or fire, except for the boron recovery tank enclosure located adjacent to the reserve station transformers. The boron tank enclosure is separated from the reserve station transformers by a reinforced concrete wall of 3-hour rated construction.

The main, normal, and reserve transformers are protected by automatic operating water spray systems.

POSITION C.5.a.(14)

Floor drains sized to remove expected firefighting water flow without flooding safety-related equipment should be provided in those areas where fixed water fire suppression systems are installed. Floor drains should also be provided in other areas where hand hose lines may be used if such firefighting water could cause unacceptable damage to safety-related equipment in the area (see NFPA-92, "Waterproofing and Draining of Floors"). Where gas suppression systems are installed, the drains should be provided with adequate seals or the gas suppression system should be sized to compensate for the loss of the suppression agent through the drains. Drains in areas containing combustible liquids should have provisions for preventing the backflow of combustible liquids to safety-related areas through the interconnected drain systems. Water drainage from areas that may contain radioactivity should be collected, sampled, and analyzed before discharge to the environment.

RESPONSE C.5.a.(14)

All safety-related areas of the plant are provided with floor drains or other protection (dikes, raised pads for equipment, etc.) to control water used for fire fighting, except as noted by deviation request. All other drain arrangements noted in this position are provided. A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11658, dated August 16, 1985 - Docket No. 50-423) regarding lack of floor drainage in Fire Areas AB-2, AB-3, AB-9, AB-10, AB-11, AB-12, AB-5, AB-6, CB-1, CB-2, CB-3, CB-4, CB-5, CB-6, CB-7, CB-16, CB-17, CB-8, CB-9, CB-10, CB-11, CB-12, EG-1, EG-2, SB-2, and SB-3.

C.5.b. Safe Shutdown Capability

POSITION C.5.b.

- (1) Fire protection features should be provided for structures, systems, and components important to safe shutdown. These features should be capable of limiting fire damage so that:
 - (a) One train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage; and
 - (b) Systems necessary to achieve and maintain cold shutdown from either the control room or emergency control station(s) can be repaired within 72 hours.
- (2) To meet the guidelines of Position C5.b.1, one of the following means of ensuring that one of the redundant trains is free of fire damage should be provided:
 - (a) Separation of cables and equipment and associated circuits of redundant trains by a fire barrier having a three hour rating. Structural steel forming a part of or supporting such fire barriers should be protected to provide fire resistance equivalent to that required of the barrier;
 - (b) Separation of cables and equipment and associated circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system should be installed in the fire area; or
 - (c) Enclosure of cable and equipment and associated circuits of one redundant train in a fire barrier having a one hour rating. In addition, fire detectors and an automatic fire suppression system should be installed in the fire area.
- (3) If the guidelines of Positions C5.b.1 and C5.b.2 cannot be met, then alternative or dedicated shutdown capability and its associated circuits, independent of cables, systems or components in the area, room, or zone under consideration should be provided.

RESPONSE C.5.b.

Safe shutdown capability is maintained throughout the plant, except Fire Areas AB-1 and RC-1, through a combination of redundant train protection as specified in Section (2) a, b, and c, and through alternate shutdown capability or through deviation request.

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11761, dated October 1, 1985 - Docket No. 50-423) regarding separation of cables and equipment in Fire Area AB-1, Zones A, B, C, D, E, and F. Refer to the response to Position C.7.a for a description of the protection provided in Fire Area RC-1.

A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11534, dated July 25, 1985 - Docket No. 50-423) regarding fiberglass drain line in 3-hour fire barriers for Fire Areas CSW-3 and CSW-4.

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11760, dated October 1, 1985 - Docket No. 50-423) regarding fire door assemblies.

C.5.c. Alternative or Dedicated Shutdown Capability

POSITION C.5.c.

(1) Alternative or dedicated shutdown capability provided for a specific fire area should be able to achieve and maintain subcritical reactivity conditions in the reactor, maintain reactor coolant inventory, achieve and maintain hot standby* conditions for a PWR (hot shutdown* for a BWR) and achieve cold shutdown* conditions within 72 hours and maintain cold shutdown conditions thereafter. During the postfire shutdown, the reactor coolant system process variables is maintained within those predicted for a loss of normal AC power, and the fission product boundary integrity is not affected; i.e., there is no fuel clad damage, rupture, or any primary coolant boundary, or rupture of the containment boundary.

*Defined in the Standard Technical Specifications

- (2) The performance goals for the shutdown functions should be:
 - (a) The reactivity control function should be capable of achieving and maintaining cold shutdown reactivity conditions.
 - (b) The reactor coolant makeup function should be capable of maintaining the reactor coolant level above the top of the core for BWRs and be within the level indication in the pressurizer for PWRs.
 - (c) The reactor heat removal function should be capable of achieving and maintaining decay heat removal.

- (d) The process monitoring function should be capable of providing direct readings of the process variables necessary to perform and control the above functions.
- (e) The supporting functions should be capable of providing the process cooling, lubrication, etc., necessary to permit the operation of the equipment used for safe shutdown functions.
- (3) The shutdown capability for specific fire areas may be unique for each such area, or it may be one unique combination of systems for all such areas. In either case, the alternative shutdown capability shall be independent of the specific fire area(s) and shall accommodate postfire conditions where off site power is available and where off site power is not available for 72 hours. Procedures shall be in effect to implement this capability.
- (4) If the capability to achieve and maintain cold shutdown will not be available because of fire damage, the equipment and systems comprising the means to achieve and maintain the hot standby or hot shutdown condition shall be capable of maintaining such conditions until cold shutdown can be achieved. If such equipment and systems will not be capable of being powered by both on site and off site electric power systems because of fire damage, an independent on site power system shall be provided. The number of operating shift personnel, exclusive of fire brigade members, required to operate such equipment and systems shall be on site at all times.
- (5) Equipment and systems comprising the means to achieve and maintain cold shutdown conditions should not be damaged by fire; or the fire damage to such equipment and systems should be limited so that the systems can be made operable and cold shutdown achieved within 72 hours. Materials for such repairs shall be readily available on site and procedures shall be in effect to implement such repairs. If such equipment and systems used prior to 72 hours after the fire will not be capable of being powered by both on site and off site electric power systems because of fire damage, an independent on site power system should be provided. Equipment and systems used after 72 hours may be powered by off site power only.
- (6) Shutdown systems installed to ensure postfire shutdown capability need not be designed to meet seismic Category I criteria, single failure criteria, or other design basis accident criteria, except where required for other reasons, e.g., because of interface with or impact on existing safety systems, or because of adverse valve actions due to fire damage.
- (7) The safe shutdown equipment and systems for each fire area should be known to be isolated from associated circuits in the fire area so that hot shorts, open circuits, or shorts to ground in the associated circuits will not prevent operation of the safe shutdown equipment. The separation and barriers between trays and conduits containing associated circuits of one safe shutdown division and trays and conduits containing associated circuits or safe shutdown cables from the redundant division, or the isolation of these associated circuits from the safe shutdown equipment, should be such that a postulated fire involving associated circuits will not prevent safe shutdown.
RESPONSE C.5.c.

Alternative shutdown capability is provided for Fire Areas CB-8, CB-9, and CB-11. Refer to FPER Sections 6 through 9 for details.

As part of the Stretch Power Uprate (SPU) project, a deviation to positions C.5.c(3) and (5) was approved by the NRC in a letter dated August 12, 2008 (Amendment No. 242), for the fire shutdown and long term steam generator makeup required to support the decay heat removal design function. In lieu of service water system (seawater) providing the long-term AFW pump suction source, an alternate defense-in-depth fire protection design approach which relied upon freshwater makeup sources was approved. The design approach considered multiple Demineralized Water Storage Tank (DWST) or Condensate Storage Tank (CST) longer-term replenishment options that included refill from the water treating system (WTS), fire water system (FPW), and the domestic water system (DWS).

86-10 EVALUATION

FP-EV-04-001 - Technical Evaluation for 3MSS*MOV74A, B, C and D Control Circuit Hot Short Modification (DCR M3-04002), addresses the adequacy of the installation of control circuit lockout switches protected by a radiant energy heat shield located in the back of Main Board 5 to prevent a fire induced hot short from resulting in spurious opening of the valves.

C.5.d. Control of Combustibles

POSITION C.5.d.(1)

Safety-related systems should be isolated or separated from combustible materials. When this is not possible because of the nature of the safety system or the combustible material, special protection should be provided to prevent a fire from defeating the safety system function. Such protection may involve a combination of automatic fire suppression, and construction capable of withstanding and containing a fire that consumes all combustibles present. Examples of such combustible materials that may not be separable from the remainder of its system are:

- (a) Emergency diesel generator fuel oil day tanks.
- (b) Turbine-generator oil and hydraulic control fluid systems.
- (c) Reactor coolant pump lube oil system.

RESPONSE C.5.d.(1)

a. Emergency diesel generator fuel-oil day tanks are protected by a manually operated, wet type sprinkler system. Heat detection is used for early warning fire detection. The tank is of ASME III, Class 3 construction.

- b. Turbine generator oil and hydraulic control fluid systems are protected by a water spray fire protection system.
- c. Reactor coolant pump lube oil systems are provided with a seismic oil collection system. Heat detection is provided for alarm and annunciation.

POSITION C.5.d.(2)

Bulk gas storage (either compressed or cryogenic) should not be permitted inside structures housing safety-related equipment. Storage of flammable gas such as hydrogen should be located outdoors or in separate detached buildings so that a fire or explosion will not adversely affect any safety-related systems or equipment. (Refer to NFPA 50A, "Gaseous Hydrogen Systems.") Care should be taken to locate high pressure gas storage containers with the long axis parallel to building walls. This will minimize the possibility of wall penetration in the event of a container failure. Use of compressed gases (especially flammable and fuel gases) inside buildings should be controlled. (Refer to NFPA 6, "Industrial Fire Loss Prevention.")

RESPONSE C.5.d.(2)

Except for the hydrogen seal oil unit in the turbine building, all flammable gas storage is outside the vital buildings. The hydrogen seal oil unit is protected by a water spray system.

The bulk hydrogen storage for the generator coolant system is located outside, south of the containment structure.

POSITION C.5.d.(3)

The use of plastic materials should be minimized. In particular, halogenated plastics such as polyvinyl chloride (PVC) and neoprene should be used only when substitute noncombustible materials are not available. All plastic materials, including flame and fire retardant materials, will burn with an intensity and Btu production in a range similar to that of ordinary hydrocarbons. When burning, they produce heavy smoke that obscures visibility and can plug air filters, especially charcoal and HEPA. The halogenated plastics also release free chlorine and hydrogen chloride when burning which are toxic to humans and corrosive to equipment.

RESPONSE C.5.d.(3)

The use of halogenated plastics is minimized. Plastic reinforced fiberglass roof drain pipe is installed through many areas of the plant. A fire retardant coating will be applied to the pipe to reduce the burning characteristics to an acceptable level. A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11658, dated August 16, 1985 - Docket No. 50-423) regarding separation of pumps within the ESF Building due to a 12 inch diameter fiberglass reinforced pipe which passes through the 3-hour fire barriers separating the pumps and associated. A closed head water curtain with directional spray heads is provided to maintain separation by protecting the fiberglass pipe. A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11534, dated July 25, 1985 -

Docket No. 50-423) regarding separation of pumps and equipment with the Circulating and Service Water Pump House due to 1.5 inch diameter fiberglass drain lines which pass through 3-hour fire barriers separating redundant pumps/trains.

POSITION C.5.d.(4)

Storage of flammable liquids should, as a minimum, comply with the requirements of NFPA 30, "Flammable and Combustible Liquids Code."

RESPONSE C.5.d.(4)

Storage of flammable liquids follows the guidance of NFPA 30.

POSITION C.5.d.(5)

Hydrogen lines in safety-related areas should be either designed to seismic Class I requirements, or sleeved such that the water pipe is directly vented to the outside, or should be equipped with excess flow valves so that in case of a line break, the hydrogen concentration in the affected areas will not exceed 2 percent.

RESPONSE C.5.d.(5)

All hydrogen gas supply piping located inside buildings is either enclosed in steel guard piping (which is vented to the atmosphere), or designed to Seismic Category I, both provisions being in accordance with BTP CMEB 9.5-1, Section C.5.d.(5).

C.5.e. Electrical Cable Construction, Cable Trays, and Cable Penetrations

POSITION C.5.e.(1)

Only metal should be used for cable trays. Only metallic tubing should be used for conduit. Thin-wall metallic tubing should not be used. Flexible metallic tubing should only be used in short lengths to connect components to equipment. Other raceways should be made of noncombustible material.

RESPONSE C.5.e.(1)

Noncombustible materials (aluminum and steel) are used for cable trays and cable conduit. Flexible metallic tubing is used only in short lengths to connect components to equipment. Raceways are of noncombustible material.

POSITION C.5.e.(2)

Redundant safety-related cable systems outside the cable spreading room should be separated from each other and from potential fire exposure hazards in non safety-related areas by fire barriers with a minimum fire rating of 3 hours. These cable trays should be provided with

continuous line-type heat detectors and should be accessible for manual firefighting. Cables should be designed to allow wetting down with fire suppression water without electrical faulting. Manual hose stations and portable hand extinguishers should be provided.

Safety-related cable trays of a single division that are separated from redundant divisions by a fire barrier with a minimum rating of 3 hours and are normally accessible for manual firefighting should be protected from the effects of a potential exposure fire by providing automatic water suppression in the area where such a fire could occur. Automatic area protection, where provided, should consider cable tray arrangements and possible transient combustibles to ensure adequate water coverage for areas that could present an exposure hazard to the cable system. Manual hose standpipe systems may be relied upon to provide the primary fire suppression (in lieu of automatic water suppression systems) for safety-related cable trays of a single division that are separated from redundant safety divisions by a fire barrier with a minimum rating of 3 hours and are normally accessible for manual firefighting if all of the following conditions are met:

- (a) The number of equivalent* standard 24-inch-wide cable trays (both safety-related and non safety-related) in a given fire area is six or less;
- (b) The cabling does not provide instrumentation, control or power to systems required to achieve and maintain hot shutdown; and
- (c) Smoke detectors are provided in the area of these cable routings, and continuous line-type heat detectors are provided in the cable trays.

Safety-related cable trays that are not accessible for manual fire fighting should be protected by a zoned automatic water system with open-head deluge or open directional spray nozzles arranged so that adequate water coverage is provided for each cable tray. Such cable trays should also be protected from the effects of a potential exposure fire by providing automatic water suppression in the area where such a fire could occur.

In other areas where it may not be possible because of other overriding design features necessary for reasons of nuclear safety to separate redundant safety-related cable systems by 3-hour-rated fire barriers, cable trays should be protected by an automatic water system with open-head deluge or open directional spray nozzles arranged so that adequate water coverage is provided for each cable tray. Such cable trays should also be protected from the effects of a potential exposure fire by providing automatic water suppression in the area where such could occur. The capability to achieve and maintain safe shutdown considering the effects of a fire involving fixed and potential transient combustibles should be evaluated with and without actuation of the automatic suppression system and should be justified on a suitably defined basis.

*Trays exceeding 24 inches should be counted as two trays; trays exceeding 48 inches should be counted as three trays, regardless of tray fill.

RESPONSE C.5.e.(2)

A safe shutdown analysis has been performed which determined if the loss of any single fire area would prevent the safe shutdown of the plant. This review assumed that the fire would be contained within the boundaries of the fire area following a complete burnout of all in situ and transient combustibles in that area. It was further assumed that in areas where redundant trains are exposed, the alternate shutdown capability would prevail.

Line-type heat detectors are not utilized in cable trays containing safety-related cables as area fire detection exists and it has been determined that there is an alternate means of bringing the plant to cold shutdown on loss of any fire area.

In the following areas, cable for redundant trains or alternate methods was found in the same fire area:

Building/Area	Fire Area (Zone)
Control Buildings - Cable Spreading Room	CB-8
Control Buildings - Control Room	CB-9
Control Buildings - Instrument Rack Room	CB-11
Auxiliary Buildings - Elevation 24 feet 6 inches floor	AB-1(D)
Containment Structure - Electrical Penetration Area	RC-1

Method of assuring safe shutdown capability:

CB-8, 9, 11 Alternate shutdown method.

- AB-1(D) Fixed automatic sprinkler installation in trays and between charging pump and RPCCW pump areas, manual fire suppression with hose streams, and portable extinguishers/area smoke detection provided, plus deviation (see Response C.5.b).
- RC-1 Fixed automatic sprinkler system installed over the electrical penetration area along with area smoke detection, plus deviation (see Response C.5.b).

POSITION C.5.e.(3), (4) and (5)

- (3) Electrical cable construction should, as a minimum, pass the flame test in the current IEEE Std 383. (This does not imply that cables passing this test will not require protection.)
- (4) Cable raceways should be used only for cables.
- (5) Miscellaneous storage and piping for flammable or combustible liquids or gases should not create a potential exposure hazard to safety-related systems.

RESPONSE C.5.e.(3), (4) and (5)

Millstone 3 design addresses these conditions.

C.5.f. Ventilation

POSITION C.5.f.

- (1) The products of combustion and the means by which they will be removed from each fire area should be established during the initial stages of plant design. Consideration should be given to the installation of automatic suppression systems as a means of limiting smoke and end heat generation. Smoke and corrosive gases should generally be discharged directly outside to an area that will not affect safety-related plant areas. The normal plant ventilation system may be used for this purpose if capable and available. To facilitate manual firefighting, separate smoke and heat vents should be provided in specific areas such as cable spreading rooms, diesel fuel oil storage areas, switchgear rooms, and other areas where the potential exists for heavy smoke conditions (see NFPA 204 for additional guidance on smoke control).
- (2) Release of smoke and gases containing radioactive materials to the environment should be monitored in accordance with emergency plans as described in the guidelines of Regulatory Guide 1.101, "Emergency Planning for Nuclear Power Plants." Any ventilation system designed to exhaust potentially radioactive smoke or gases should be evaluated to ensure that inadvertent operation or single failures will not violate the radiologically controlled areas of the plant design. This requirement includes containment functions for protecting the public and maintaining habitability for operations personnel.
- (3) Special protection for ventilation power and control cables may be required. The power supply and controls for mechanical ventilation systems should be run outside the fire area served by the system where practical.
- (4) Engineered safety feature filters should be protected in accordance with the guidelines of Regulatory Guide 1.52. Any filter that includes combustible materials and is a potential exposure fire hazard that may affect safety-related components should be protected as determined by the fire hazards analysis.
- (5) The fresh air supply intakes to areas containing safety-related equipment or systems should be located remote from the exhaust air outlets and smoke vents of other fire areas to minimize the possibility of contaminating the intake air with the products of combustion.
- (6) Stairwells should be designed to minimize smoke infiltration during a fire.
- (7) Where total flooding gas extinguishing systems are used, area intake and exhaust ventilation dampers should be controlled in accordance with NFPA 12, "Carbon Dioxide Systems," and NFPA 12A, "Halon 1301 Systems," to maintain the necessary gas concentration.

RESPONSE C.5.f.

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The east and west switchgear rooms, instrument rack room, computer room and the mechanical equipment room have a dedicated ventilation system (control building purge system) designed specifically to exhaust smoke, other products of combustion or fire suppression gases using manual controls. Portable ventilation equipment is available within the cable spreading area for smoke and CO_2 removal. The control room will be purged manually by portable fans. Normal plant ventilation systems will be used in other areas of the plant for this purpose. Portable smoke ejectors will be provided to assist in removal of the products of combustion should the normal ventilation systems be unavailable because of damper closures or other failures.

Where total flooding gas extinguishing systems are used, air intake and exhaust ventilation dampers are provided with mechanisms that will close them on initiation of gas flow (as needed). Fire barrier ventilation openings are provided with fire dampers that will close if a fire should cause room temperature to exceed a set value.

Fresh air supply intakes to areas containing safety-related equipment or systems are remote from exhaust air outlets of other fire areas. Stairwells are designed to minimize smoke infiltration during a fire.

Stairwell and elevator shafts, excluding the turbine building and containment, have been fire rated for two hours, with Class B fire rated doors in compliance with NEPIA Specification for Basic Fire Protection for Nuclear Power Plants, NEPIA File No. 124B, 1974. Escape and access routes will be established and indicated accordingly.

C.5.g. Lighting and Communication

POSITION C.5.g

Lighting and two-way voice communication are vital to safe shutdown and emergency response in the event of fire. Suitable fixed and portable emergency lighting and communication device should be provided as follows:

- (1) Fixed self-contained lighting consisting of fluorescent or sealed-beam units with individual eight hour minimum battery power supplies should be provided in areas that must be manned for safe shutdown and for access and egress routes to and from all fire areas. Safe shutdown areas include those required to be manned if the control room must be evacuated.
- (2) Suitable sealed-beam battery-powered portable hand lights should be provided for emergency use by the fire brigade and other operations personnel required to achieve safe plant shutdown.
- (3) Fixed emergency communications independent of the normal plant communication system should be installed at preselected stations.
- (4) A portable radio communications system should be provided for use by the fire brigade and other operations personnel required to achieve safe plant shutdown. This system

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should not interfere with the communications capabilities of the plant security force. Fixed repeaters installed to permit use of portable radio communication units should be protected from exposure fire damage. Preoperational and periodic testing should demonstrate that the frequencies used for portable radio communication will not affect the actuation of protective relays.

RESPONSE C.5.g.

Emergency lighting will be installed in all areas of the plant that may have to be manned for safe shutdown operations and in access and egress routes to and from all areas. The emergency lighting consists of fixed, self-contained fluorescent or sealed-beam units with individual 8-hour minimum battery power supplies. The emergency lighting system provides illumination of the access and egress pathways. In addition, this lighting is supplemented with the Millstone Station Security Lighting for outdoor access/egress routes, and access to the Appendix R equipment cage in Warehouse Building number 435.

DC lighting with 8-hour self-contained sealed battery packs are also installed inside the MP3 SBO (AAC) diesel and switchgear enclosures for access/egress and operation of equipment from the control board. The MP3 SBO diesel generator is credited to supply MP2 with alternate AC power in the event of a fire in specifically identified Unit 2 Appendix R fire areas.

The security lighting system is also credited for MP3 operations personnel access/egress yard area routes to the MP3 SBO (AAC) diesel and switchgear enclosures. Access is required to start the diesel and energize the 4160 volt tie to MP2 in the event of a MP2 Appendix R fire in certain areas.

A fixed emergency communication system is provided which is independent of the normal plant communication system at preselected stations. A portable radio communications system has been provided for use by the fire brigade. Fixed repeaters have been installed for portable radio communication. If a fire should damage the Millstone 3 fixed repeater station, the plant's portable radios have been equipped with multiband frequency capability. This multiband frequency capability will allow plant personnel to continue communications using the base station as backup communication center or the capability to change frequency bands and operate through either adjacent plant's fixed repeater system.

C.6. FIRE DETECTION AND SUPPRESSION

C.6.a. Fire Detection

POSITION C.6.a.

- (1) Detection systems should be provided for all areas that contain or present a fire exposure to safety-related equipment.
- (2) Fire detection systems should comply with the requirements of Class A systems as defined in NFPA 72D, "Standard for the Installation, Maintenance, and Use of Proprietary

Protective Signaling Systems," and Class I circuits as defined in NFPA 70, "National Electrical Code."

- (3) Fire detectors should be selected and installed in accordance with NFPA 72E, "Automatic Fire Detectors." Preoperational and periodic testing of pulsed line-type heat detectors should demonstrate that the frequencies used will not affect the actuation of protective relays in other plant systems.
- (4) Fire detection systems should give audible and visual alarm and annunciation in the control room. Where zoned detection systems are used in a given fire area, local means should be provided to identify which detector zone has actuated. Local audible alarms should sound in the fire area.
- (5) Fire alarms should be distinctive and unique so they will not be confused with any other plant system alarms.
- (6) Primary and secondary power supplies should be provided for the fire detection system and for electrically operated control valves for automatic suppression systems. Such primary and secondary power supplies should satisfy provisions of Section 2220 of NFPA 72D. This can be accomplished by using normal off site power as the primary supply with a four hour battery supply as secondary supply; and by providing capability for manual connection to the Class 1E emergency power bus within 4 hours of loss of off site power. Such connection should follow the applicable guidelines in Regulatory Guides 1.6, 1.32, and 1.75.

RESPONSE C.6.a.

The fire detection and alarm systems installed in all areas of the plant have been designed in accordance with the intent of NFPA 72D, Standard for the Installation, Maintenance and Use of Proprietary Protective Signaling Systems. The initiating circuits of the fire alarm systems in the plant utilize a Class A circuit with the exception of Warehouse No. 5/condensate polishing facility (CPF), and the MP3 Fire Pump House.

A Class A circuit uses a 4-wire loop design which will allow the transmission of an alarm signal during a single break or a single ground fault of the circuit.

Warehouse No. 5/CPF and Fire Pump House have a Class B circuit design. This design incorporates a 2-wire loop and will not allow the transmission of an alarm during a single break fault of the circuit. Warehouse No. 5/CPF does not contain any safe shutdown components equipment, and is separated from safe shutdown areas by three hour fire barriers. The MP3 Fire Pump House contains equipment credited for MP2 Appendix R requirements.

The signaling circuits between the zone panels and the main fire protection board meet the intent of a Class A circuit by using two sets of 2-wire communication lines between them. This system also will allow the transmission of an alarm signal during a single break or ground fault in the

circuit. The detection devices consist of heat, smoke, and flame detectors which were selected and located based on the intent of NFPA 72E guidelines and sound engineering judgment.

All detectors transmit alarms to a local alarm panel which sounds distinct audible alarms while displaying a visual signal in the vicinity of the panel, generally overhead. All alarm and trouble signals transmit to the main fire alarm console in the control room.

The detection zone panels operate with 24 V DC battery backup power. The main fire alarm panel is powered by a reliable electrical supply and has an independent standby battery supply. These electrical power supply arrangements meet the intent of the provisions of Section 2220 of NFPA 72D.

A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11658, dated August 16, 1985 - Docket No. 50-423) regarding no fire detection provided in Fire Area MSV-1. A subsequent deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11852, dated November 4, 1985 - Docket No. 50-423) in regards to NNECO redefining its design criteria and providing detection in Fire Area MSV-1 as well as the Hydrogen Recombiner Building and the Auxiliary Building.

C.6.b. Fire Protection Water Supply Systems

POSITION C.6.b.

- (1) An underground yard fire main loop should be installed to furnish anticipated water requirements. NFPA 24, "Standard for Outside Protection," gives necessary guidance for such installation. It references other design codes and standards developed by such organizations as the American National Standards Institute (ANSI) and the American Water Works Association (AWWA). Type of pipe and water treatment should be design considerations with tuberculation as one of the parameters. Means for inspecting and flushing the systems should be provided.
- (2) Approved visually indicating sectional control valves such as post-indicator valves should be provided to isolate portions of the main for maintenance or repair without shutting off the supply to primary and backup fire suppression systems serving areas that contain or expose safety-related equipment.
- (3) Valves should be installed to permit isolation of outside hydrants from the fire main for maintenance or repair without interrupting the water supply to automatic or manual fire suppression systems in any area containing or presenting a fire hazard to safety-related or safe shutdown equipment.
- (4) The fire main system piping should be separate from service or sanitary water system piping, except as described in Position C.5.c.(4).
- (5) A common yard fire main loop may serve multi-unit nuclear power plant sites if cross-connected between units. Sectional control valves should permit maintaining

independence of the individual loop around each unit. For such installations, common water supplies may also be utilized. For multiple reactor sites with widely separated plants (approaching 1 mile or more), separate yard fire main loops should be used.

- (6) If pumps are required to meet system pressure or flow requirements, a sufficient number of pumps should be provided to ensure that 100 percent capacity will be available assuming failure of the largest pump or loss of off site power (e.g., three 50 percent pumps or two 100 percent pumps). This can be accomplished, for example, by providing either:
 - (a) Electric motor-driven fire pump(s) and diesel-driven fire pump(s); or (b) Two or more seismic Category I Class 1E electric motor-driven fire pumps connected to redundant Class 1E emergency power buses (see Regulatory Guides 1.6, 1.32, and 1.75).

Individual fire pump connections to the yard fire main loop should be separated with sectionalizing valves between connections. Each pump and its driver and controls should be located in a room separated from the remaining fire pumps by a fire wall with a minimum rating of 3 hours. The fuel for the diesel fire pump(s) should be separated so that it does not provide a fire source exposing safety-related equipment. Alarms indicating pump running, driver availability, failure to start, and low fire-main pressure should be provided in the control room.

The fire pump installation should conform to NFPA 20, "Standard for the Installation of Centrifugal Fire Pumps."

- (7) Outside manual hose installation should be sufficient to provide an effective hose stream to any on site location where fixed or transient combustibles could jeopardize safety-related equipment. Hydrants should be installed approximately every 250 ft. on the yard main system. A hose house equipped with hose and combination nozzle and other auxiliary equipment recommended in NFPA 24, "Outside Protection," should be provided as needed, but at least every 1,000 ft. Alternatively, mobile means of providing hose and associated equipment, such as hose carts or trucks, may be used. When provided, such mobile equipment should be equivalent to the equipment supplied by three hose houses.
- (8) Threads compatible with those used by local fire departments should be provided on all hydrants, hose couplings, and standpipe risers.
- (9) Two separate, reliable freshwater supplies should be provided. Saltwater or brackish water should not be used unless all freshwater supplies have been exhausted. If tanks are used, two 100 percent (minimum of 300,000 gallons each) system capacity tanks should be installed. They should be so interconnected that pumps can take suction from either or both. However, a failure in one tank or its piping should not cause both tanks to drain. Water supply capacity should be capable of refilling either tank in 8 hours or less.
- (10) Common tanks are permitted for fire and sanitary or service water storage. When this is done, however, minimum fire water storage requirements should be dedicated by passive

means, for example, use of a vertical standpipe for other water services. Administrative controls, including locks for tank outlet valves, are unacceptable as the only means to ensure minimum water volume.

- (11) The fire water supply should be calculated on the basis of the largest expected flow rate for a period of 2 hours, but not less than 300,000 gallons. This flow rate should be based (conservatively) on 500 gpm for manual hose streams plus the largest design demand of any sprinkler or deluge system as determined in accordance with NFPA 13 or NFPA 15. The fire water supply should be capable of delivering this design demand over the longest route of the water supply system.
- (12) Freshwater lakes or ponds of sufficient size may qualify as sole source of water for fire protection but require separate redundant suctions in one or more intake structures. These supplies should be separated so that a failure of one supply will not result in a failure of the other supply.
- (13) When a common water supply is permitted for fire protection and the ultimate heat sink, the following conditions should also be satisfied:
 - (a) The additional fire protection water requirements are designed into the total storage capacity, and
 - (b) Failure of the fire protection system should not degrade the function of the ultimate heat sink.
- (14) Other water systems that may be used as one of the two fire water supplies should be permanently connected to the fire main system and should be capable of automatic alignment to the fire main system. Pumps, controls, and power supplies in these systems should satisfy the requirements for the main fire pumps. The use of other water systems for fire protection should not be incompatible with their functions required for safe plant shutdown. Failure of the other system should not degrade the fire main system.

RESPONSE C.6.b.

The Millstone 3 water supply system is provided from the existing fire protection water supply system for Units 1 and 2. This supply system, as designed, is in compliance with the requirements of this position with the exception of the 300,000-gallon minimum tank size. The NRC has reviewed this exception and found the arrangement acceptable. A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11534, dated July 25, 1985 - Docket No. 50-423) regarding the capacity of the fire protection freshwater storage tanks.

A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11658, dated August 16, 1985 - Docket No. 50-423) regarding the separation and capacity of fire pumps.

In addition, the Unit 3 electric fire pump is equipped with mechanical seals instead of packing and a recirculation line to the storage tank in lieu of a recirculation relief valve. These deviations from the NFPA 20 standard were evaluated and found acceptable to the Fire Protection Program.

C.6.c. Water Sprinkler and Hose Standpipe Systems

POSITION C.6.c.(1)

Sprinkler systems and manual hose station standpipes should have connections to the plant underground water main so that a single active failure or a crack in a moderate-energy line cannot impair both the primary and backup fire suppression systems. Alternatively, headers fed from each end are permitted inside buildings to supply both sprinkler and standpipe systems, provided steel piping and fittings meeting the requirements of ANSI B31.1, "Power Piping," are used for the headers up to and including the first valve supplying the sprinkler systems where such headers are part of the seismically analyzed hose standpipe system. When provided, such headers are considered an extension of the yard main system. Each sprinkler and standpipe system should be equipped with OS&Y (outside screw and yoke) gate valve or other approved shutoff valve and waterflow alarm. Safety-related equipment that does not itself require sprinkler water fire protection but is subject to unacceptable damage if wet by sprinkler water discharge should be protected by water shields or baffles.

RESPONSE C.6.c.(1)

All sprinkler and hose station standpipe systems have independent yard fire main connections except for the emergency generator enclosure, the auxiliary building standpipe/water curtain system, the machine shop and service building, the containment structure, the waste disposal building, engineered safeguards building standpipe, and the auxiliary boiler building.

Of these buildings noted, only the following contain safe shutdown related equipment:

Engineered Safeguards Features Building (ESF)

Emergency Generator Enclosures (EGE)

Auxiliary Building, elevation 24 feet 6 inches (Water Curtain)

Containment Structure

For all buildings without independent feeds, except the containment structure, NNECo proposes to utilize handled hose lines from outside hydrants or 2.5 inch hose station cross-connections from adjacent unaffected systems as a backup (independent) supply source.

The containment structure has a standpipe/hose station system throughout, as well as fixed wet pipe sprinklers for the electrical penetration area. Both systems are fed from the same single supply line. Redundancy is not necessary, however, as hose stations will only be utilized during shutdowns when containment is accessible. At this time, the protection of the electrical

penetration area is not a safety concern as the reactor is shut down. The reverse is true during operating periods.

For additional information, refer to the NNECo response to Open SER Item 14-7, Independent Sprinkler and Hose Station Connections, Docket No. 50-423, B11478, W. G. Council to B. J. Youngblood which discusses, in detail, NNECo's deviation request regarding independent feed connections.

All sprinkler systems and standpipe/hose station systems are equipped with an approved control valve (OS&Y).

Inadvertent operation is addressed in the "Inadvertent Operational Rupture of Fire Protection Equipment-Millstone Unit 3 Report," dated June 1985.

POSITION C.6.c.(2)

Control and sectionalizing valves in the fire water systems should be electrically supervised or administratively controlled. The electrical supervision signal should indicate in the control room. All valves in the fire protection system should be periodically checked to verify position (see NFPA 26, "Supervision of Valves").

RESPONSE C.6.c.(2)

All fire protection control and sectionalizing valves are electronically supervised or locked open. Electronic supervision indicates at local alarm panels as a trouble signal and at the main fire protection panel in the control room. Keys for all locked valves are readily available to the brigade members for emergency use.

POSITION C.6.c.(3)

Fixed water extinguishing systems should conform to requirements of appropriate standards such as NFPA 13, "Standard for the Installation of Sprinkler Systems," and NFPA 15, "Standard for Water Spray Fixed Systems."

RESPONSE C.6.c.(3)

The water suppression systems were designed to satisfy the intent of the guidelines of NFPA 13, Standard for the Installation of Sprinkler Systems, and NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection. The areas equipped with water suppression systems are listed in Section 4 of the FPER.

POSITION C.6.c.(4), (5), (6) and (7)

(4) Interior manual hose installation should be able to reach any location that contains, or could present a fire exposure hazard to, safety-related equipment with at least one effective hose stream. To accomplish this, standpipes with hose connections equipped

with a maximum of 100 feet of 1 1.5 inch woven-jacket, lined fire hose and suitable nozzles should be provided in all buildings an all floors. Individual standpipes should be at least 4 inches in diameter for multiple hose connections and 2.5 inches in diameter for single hose connections. These systems should follow the requirements of NFPA 14, "Standpipe and Hose Systems," for sizing, spacing, and pipe support requirements.

Hose stations should be located as dictated by the fire hazard analysis to facilitate access and use for firefighting operations. Alternative hose stations should be provided for an area if the fire hazard could block access to a single hose station serving that area.

Provisions should be made to supply water at least to standpipes and hose connections for manual firefighting in areas containing equipment required for safe plant shutdown in the event of a safe shutdown earthquake. The piping system serving such hose stations should be analyzed for SSE loading and should be provided with supports to ensure system pressure integrity. The piping and valves for the portion of hose standpipe system affected by this functional requirement should, as a minimum, satisfy ANSI B31.1, "Power Piping." The water supply for this condition may be obtained by manual operator actuation of valves in a connection to the hose standpipe header from a normal seismic Category I water system such as the essential service water system. The cross connection should be (a) capable of providing flow to at least two hose stations (approximately 75 gpm per hose station), and (b) designed to the same standards as the seismic Category I water system; it should not degrade the performance of the seismic Category I water system.

- (5) The proper type of hose nozzle to be supplied to each area should be based on the fire hazard analysis. The usual combination spray/straight-stream nozzle should not be used in areas where the straight-stream can cause unacceptable mechanical damage. Fixed fog nozzles should be provided at locations where high-voltage shock hazards exist. All hose nozzles should have shutoff capability. (Guidance on safe distances for water application to live electrical equipment may be found in the "NFPA Fire Protection Handbook.")
- (6) Fire hose should be hydrostatically tested in accordance with the recommendations of NFPA 1962, "Fire Hose Care, Use, Maintenance." Hose stored in outside hose houses should be tested annually. Interior standpipe hose should be tested every three years.
- (7) Certain fires, such as those involving flammable liquids, respond well to foam suppression. Consideration should be given to use of mechanical low-expansion foam systems, low-expansion foam generators, or aqueous film-forming foam (AFFF) systems, including the AFFF deluge system. These systems should comply with the requirements of NFPA 11, NFPA 11A, NFPA 11B, and NFPA 16, as applicable.

RESPONSE C.6.c.(4), (5), (6) and (7)

Wet standpipe systems are provided as noted in each fire area in Section 5. The piping systems for standpipes are not seismically designed.

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Hose stations are generally located to provide one effective hose stream to any location requiring protection. This coverage is based on using 100 feet of rubber lined, synthetic woven, jacketed fire hose and includes a 30 foot nozzle reach from any adjustable spray shut-off nozzle. All hose will be hydrostatically tested following administrative control procedures.

Hose station locations are shown on plant Fire Protection Water layout drawings and are listed for each fire area in the individual fire hazard analyses. Hose stations are also shown on the Fire Protection Water Piping and Instrumentation Diagram drawings.

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11769, dated October 7, 1985 - Docket No. 50-423) regarding lack of hose stations in Fire Areas AB-5; AB-6, Zone A; CSW-1, CSW-2, CSW-3, CSW-4, HR-1, MSV-1, SB-2, and SB-3.

The hydrogen recombiner building is adequately covered by 1.5 inch hoses placed within the hose house located approximately 80 feet south of the building. The circulating and service water pumphouse, east and west service water cubicles are covered by a single dry hose house located outside of the north floor area of the building.

Portable foam suppression equipment will be provided for fire brigade use. A deviation request addressing hose station design was discussed with the NRC staff during a December 1984 meeting. A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11769, dated October 7, 1985 - Docket No. 50-423) regarding hose station design.

C.6.d. Halon Suppression Systems

POSITION C.6.d.

Halon fire extinguishing systems should comply with the requirements of NFPA 12A and NFPA 12B, "Halogenated Fire Extinguishing Agent Systems - Halon 1301 and Halon 1211." Only UL-listed or FM-approved agents should be used. Provisions for locally disarming automatic Halon systems should be key locked and under strict administrative control. Automatic Halon extinguishing systems should not be disarmed unless controls as described in Position C.2.j. are provided.

In addition to the guidelines of NFPA 12A and 12B, preventive maintenance and testing of the systems, including check-weighing of the Halon cylinders, should be done at least quarterly.

Particular consideration should also be given to:

- (1) Minimum required Halon concentration, distribution, soak time, and ventilation control;
- (2) Toxicity of Halon;

- (3) Toxicity and corrosive characteristics of the thermal decomposition products of Halon; and
- (4) Location and selection of the activating detectors.

RESPONSE C.6.d.

Millstone 3 has four Halon 1301 fire-suppression systems. These automatic operating, total flood design systems are used in the computer room and instrument rack room underfloor areas, the records file room of the warehouse, and Fire Pump House.

These systems, except for the Fire Pump House, were designed to NFPA 12A-1975 edition. Refer to FPER Section 4 for details of the installations. The Fire Pump House was designed earlier than 1975, as it was originally the MP1 Fire Pump House. The Fire Pump House was evaluated to comply with NFPA 12A-1980 Ed.

The systems are designed to provide a minimum 7 percent by room air volume concentration within a 10 second discharge time.

Each system, except for the Fire Pump House, is automatically actuated by the operation of a single rate-compensated type heat detector located in the protected area. Detectors were located in the protected areas based on guidelines of NFPA 72E and NFPA 12A. The Fire Pump House is a cross-zoned system consisting of a smoke detector and a rate of rise heat detector.

Existing administrative control procedures will address the requirements for disarming of these systems, and existing station surveillance procedures will cover periodic system testing, inspection, and maintenance.

Toxicity of thermal decomposition products of Halon are not a concern since the underfloor areas are inaccessible and personnel will be instructed to leave the above floor areas prior to discharge.

Should there be any corrosion to electrical components in the instrument rack room, as a result of decomposed products of Halon, there will be no impact on safe shutdown since alternate shutdown capacity exists in a separate fire area.

C.6.e. Carbon Dioxide Suppression Systems

POSITION C.6.e.

Carbon dioxide extinguishing systems should comply with the requirements of NFPA 12, "Carbon Dioxide Extinguishing Systems." Where automatic carbon dioxide systems are used, they should be equipped with a predischarge alarm system and a discharge delay to permit personnel egress. Provisions for locally disarming automatic carbon dioxide systems should be key locked and under strict administrative control. Automatic carbon dioxide extinguishing systems should not be disarmed unless controls as described in Position C.2.j. are provided. Particular consideration should also be given to:

- (1) Minimum required CO₂ concentration, distribution, soak time, and ventilation control;
- (2) Anoxia and toxicity of CO_2 ;
- (3) Possibility of secondary thermal shock (cooling) damage;
- (4) Conflicting requirements for venting during CO₂ injection to prevent overpressurization versus sealing to prevent loss of agent; and
- (5) Location and selection of the activating detectors.

RESPONSE C.6.e.

Total flooding CO_2 systems have been designed to attain and maintain adequate CO_2 concentrations as required by the nature of the specific hazard based on NFPA No. 12 guidelines. Upon actuation, the minimum design concentrations are obtained within 1 minute for surface fires and within 7 minutes for deep-seated fires at a rate not less than that required to develop a concentration of 34 percent in 1 minute for the fuel oil tank vaults and 30 percent in 2 minutes for all other total flooding areas. This discharge is considered the "Initial Discharge." To maintain the desired concentrations for a 20 minute soak time and compensate for normal agent leakage from the area, an "Extended Discharge" system is used.

The local application system in the auxiliary boiler building fuel oil pit has been designed based on the rate by volume method. The duration was extended to allow for cooling of metal parts in the pump pit area to prevent oil vapor re-ignition.

In all electrical cable hazard areas, the total flooding CO₂ systems are manually actuated.

Manual system actuation is accomplished by the actuation of both cross-zoned smoke detector strings and opening of the predischarge timer "lockout" ball valve to initiate CO_2 discharge. Both area detection cross-zone signals together provide one of the two inputs necessary to discharge CO_2 . The other input is provided by the opening of the predischarge timer "lockout" ball valve. Upon actuation of the first cross zone, an alarm signal is transmitted to the local alarm panel and the Control Room. Upon actuation of the second cross zone, an alarm signal is transmitted to the local alarm panel and to the Control Room, as well as generating an alarm condition within the local Chemetron panel. With both cross-zones in alarm or with the predischarge timer "lockout" ball valve open, a horn actuates within the affected area and a strobe light actuates outside each of the access doors to the area. Upon discharge of CO_2 in the protected area, ventilation damper closure and fan shutdown signals are initiated either from both zones in alarm in the Chemetron control panel (cross zones in alarm and ball valve open) or CO_2 discharge pressure, a local pneumatic air horn sounds in the area, and an odorizer is released indicating CO_2 discharge.

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In the combustible liquid hazard areas, automatic system actuation is accomplished by the operation of a single zone, rate compensated heat detector circuit. Operation of a detector will initiate transmission of a discharge alarm to the local Chemetron panel, building alarm panel, and the main fire protection console in the Control Room, and will actuate predischarge alarms in the affected area. Following a time delay, CO_2 discharge will then occur.

The manual operating local application areas, as well as all other manual and automatic operating CO_2 suppression systems, are or can be actuated by manual key station devices located outside the hazards areas or by the key switch at the Chemetron panel. Operation of the manual devices will cause CO_2 to discharge following a time delay when the "lockout" valve at the Chemetron panel is in an open position. The key station actuation will immediately operate predischarge alarms in the protected area and will initiate alarm signal transmission as described above. CO_2 discharge into the area sounds the local pneumatic discharge horns and initiates odorizer release.

Repeat CO_2 discharges into any protected area can be accomplished by using the manual key station for that area or the key switch at the Chemetron panel. This may be done without resetting the control panel and may continue for as many cycles as there is available CO_2 storage.

To avoid the concern of "thermal shock," all CO_2 discharge nozzles have been positioned, where possible, to limit the effects of direct impingement of CO_2 on sensitive electrical equipment.

"Lockout" of both automatic and manual discharge into any protected area is accomplished by operating a ball valve located at the Chemetron control panel. Only by manually repositioning this valve to the open position can CO_2 discharge. During "lockout," all detection systems continue to function and transmit alarm signals. When an automatic system is in the "locked-out" mode, a trouble signal is actuated at the Chemetron panel, the building alarm panel, and at the main fire protection console and color-graphics computer unit in the Control Room to provide continuous notification that the automatic CO_2 system for the affected area is locked out. For a manual system, a trouble-signal is actuated at the Chemetron panel, the building alarm panel, and at the main fire protection console and color-graphics computer unit when the "lockout" ball valve is in a not fully closed position, alerting the Control Room of the misaligned valve position. The disarming of automatic CO_2 systems will be regulated by an existing administrative control procedure. Relief venting for each CO_2 protected area has been provided, as needed, in order to prevent over-pressurization of the area in accordance with NFPA 12 guidelines.

C.6.f. Portable Extinguishers

POSITION C.6.f.

Fire extinguishers should be provided in areas that contain, or could present a fire exposure hazard to, safety-related equipment in accordance with guidelines of NFPA 10, "Portable Fire Extinguishers, Installation, Maintenance and Use." Dry chemical extinguishers should be installed with due consideration given to possible adverse effects on safety-related equipment installed in the area.

RESPONSE C.6.f.

All areas of the plant will be provided with portable extinguishers in accordance with guidelines of NFPA 10 with the exception of inside containment. A deviation request to provide extinguishers inside containment was discussed with the NRC staff in December 1984. A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11534, dated July 25, 1985 - Docket No. 50-423) regarding lack of portable fire extinguishers in Fire Area RC-1 when the reactor is at power.

C.7. GUIDELINES FOR SPECIFIC PLANT AREAS

C.7.a. Primary and Secondary Containment

POSITION C.7.a.

(1) <u>Normal Operation</u> - Fire protection requirements for the primary and secondary containment areas should be provided for hazards identified by the fire hazards analysis.

Examples of such hazards include lubricating oil or hydraulic fluid system for the primary coolant pumps, cable tray arrangements and cable penetrations, and charcoal filters. Because of the general inaccessibility of primary containment during normal plant operation, protection should be provided by automatic fixed systems. The effects of postulated fires within the primary containment should be evaluated to ensure that the integrity of the primary coolant system and the containment is not jeopardized assuming no action is taken to fight the fire.

- (a) Operation of the fire protection systems should not compromise the integrity of the containment or other safety-related systems. Fire protection activities in the containment areas should function in conjunction with total containment requirements such as ventilation and control of contaminated liquid and gaseous release.
- (b) Inside noninerted containment one of the fire protection means stated in Positions C.5.b.1 and C.5.b.2 or the following fire protection means should be provided: separation of cables and equipment and associated non safety circuits of redundant trains by a noncombustible radiant energy shield having a minimum fire rating of one-half hour.
- (c) In primary containment, fire detection systems should be provided for each fire hazard. The type of detection used and the location or the detectors should be the most suitable for the particular type of fire hazard identified by the fire hazard analysis.

A general area fire detection capability should be provided in the primary containment as backup for the above described hazard detection. To accomplish this, suitable smoke or heat detectors compatible with the radiation environment should be installed.

(d) Standpipe and hose stations should be inside PWR containments and BWR containments that are not inerted. Standpipe and hose stations inside containment may be connected to a high quality water supply of sufficient quantity and pressure other than the fire main loop if plant-specific features prevent extending the fire main supply inside containment. For BWR drywells, standpipe and hose stations should be placed outside the drywell with adequate lengths of hose, no longer than 100 ft., to reach any location inside the drywell with an effective hose stream.

The containment penetration of the standpipe system should meet the isolation requirements of General Design Criterion 56 and should be seismic Category I and Quality Group B.

(e) The reactor coolant pumps should be equipped with an oil collection system if the containment is not inerted during normal operation. The oil collection system should be so designed, engineered, and installed that failure will not lead to fire during normal or design basis accident conditions and that there is reasonable assurance that the system will withstand the safe shutdown earthquake.

Such collection systems should be capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pump lube oil systems. Leakage should be collected and drained to a vented closed container that can hold the entire lube oil system inventory. A flame arrester in the vent if the flash point characteristics of the oil present the hazard of fire flashback. Leakage points to be protected should include lift pump and piping overflow lines, lube oil cooler, oil fill and drain lines and plugs, flanged connections on oil lines, and lube oil reservoirs where such features exist on the reactor coolant pumps. The drain line should be large enough to accommodate the largest potential oil leak.

- (f) For secondary containment areas, cable fire hazards that could affect safety should be protected as described in Position C.5.e.(2). The type of detection system for other fire hazards identified by the fire hazards analysis should be the most suitable for the particular type of fire hazard.
- (2) <u>Refueling and Maintenance</u> Refueling and maintenance operations in containment may introduce additional hazards such as contamination control materials, decontamination supplies, wood planking, temporary wiring, welding, and flame cutting (with portable compressed gas fuel supply). Possible fires would not necessarily be in the vicinity of fixed detection and suppression systems. Management procedures and controls necessary to ensure adequate fire protection for transient fire loads are discussed in Position C.1.

Adequate self-contained breathing apparatus should be provided near the containment entrances for firefighting and damage control personnel. These units should be independent of any

breathing apparatus or air supply systems provided for general plant activities and should be clearly marked as emergency equipment.

RESPONSE C.7.a.

C.7.a. Containment

A seismic oil collection system has been provided for each reactor coolant pump lube oil system. Heat detectors are installed in the vicinity of each lube oil pump with annunciation to the control room and to a local alarm panel.

Electrical penetrations inside containment are protected by an automatic operating wet pipe sprinkler system. Smoke detection is installed along with the sprinkler protection. Refer to Section 8 of the FPER for details of the conditions within containment providing equivalent protection in lieu of providing fire barriers.

Manual hose stream coverage is provided inside containment so that all accessible areas of the structure are covered by at least one stream. Supply for the hoses is from a valved connection to the plant fire water loop.

Existing administrative controls address the control of combustibles and sources of ignition at all times in the plant. These controls also will be used during refueling and maintenance activities.

Adequate self-contained breathing apparatus will be located outside of containment for use in containment firefighting.

A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11761, dated October 1, 1985 - Docket No. 50-423) regarding separation of cables and equipment in Fire Area RC-1.

C.7.b. Control Room Complex

POSITION C.7.b.

The control room complex (including galleys, office spaces, etc.) should be protected against disabling fire damage and should be separated from other areas of the plant by floors, walls, and roof having minimum fire resistance ratings of three hours. Peripheral rooms in the control room complex should have automatic water suppression and should be separated from the control room by noncombustible construction with a fire resistance rating of one hour. Ventilation system openings between the control room and peripheral rooms should have automatic smoke dampers that close on operation of the fire detection or suppression system. If a Halon flooding system is used for fire suppression, these dampers should be strong enough to support the pressure rise accompanying Halon discharge and seal tightly against infiltration of Halon into the control room. Carbon dioxide flooding systems are not acceptable for these areas.

Manual firefighting capability should be provided for both:

- (1) Fire originating within a cabinet, console, or connecting cables; and
- (2) Exposure fires involving combustibles in the general area.

Portable Class A and Class C fire extinguishers should be located in the control room. A hose station should be installed immediately outside the control room.

Nozzles that are compatible with the hazards and equipment in the control room should be provided for the manual hose station. The nozzles chosen should satisfy actual firefighting needs, satisfy electrical safety, and minimize physical damage to electrical equipment from hose stream impingement.

Smoke detectors should be provided in the control room, cabinets, and consoles. If redundant safe shutdown equipment is located in the same control room cabinet or console, additional fire protection measures should be provided. Alarm and local indication should be provided in the control room.

Breathing apparatus for control room operators should be readily available.

The outside air intake(s) for the control room ventilation system should be provided with smoke detection capability to alarm in the control room to enable manual isolation of the control room ventilation system and thus prevent smoke from entering the control room.

Venting of smoke produced by fire in the control room by means of the normal ventilation system is acceptable; however, provision should be made to permit isolation of the recirculating portion of the normal ventilation system. Manually operated venting of the control room should be available to the operators.

All cables that enter the control room should terminate in the control room. That is, no cabling should be routed through the control room from one area to another. Cables in underfloor and ceiling spaces should meet the separation criteria necessary for fire protection.

Air-handling functions should be ducted separately from cable runs in such spaces; i.e., if cables are routed in underfloor or ceiling spaces, these spaces should not be used as air plenums for ventilation of the control room. Fully enclosed electrical raceways located in such underfloor and ceiling spaces, if over 1 square foot in cross-sectional area, should have automatic fire suppression inside. Area automatic fire suppression should be provided for underfloor and ceiling spaces if used for cable runs unless all cable is run in 4-inch or smaller steel conduit or the cables are in fully enclosed raceways internally protected by automatic fire suppression.

There should be no carpeting in the control room.

RESPONSE C.7.b.

C.7.b. Control Room

The control room complex is separated from other plant areas by 3-hour fire-rated construction.

Portable fire fighting capability is provided with portable fire extinguishers within the control room. Manual hose streams can be brought into the control room from the adjacent service building and the control building stairwell if needed.

Breathing apparatus for the operators is provided in the control room.

Smoke detection is provided within the main control board cabinets and in selected areas.

Approved flame-resistant carpet is installed on the concrete floor.

Radiant energy heat shield (Carborundum Duraboard) provides fire separation for atmospheric relief bypass valve (ARBV, 3MSS*MOV74) lockout switches A through D from the remainder of Main Board No. 5.

The outside air intakes for the ventilation system have smoke detection capability with annunciation in the control room. The control room would be vented by portable fans.

All cable entering the control room terminates in the control room. The cable in the control room does not meet required separation criteria; however, alternate shutdown capability has been provided.

A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11658, dated August 16, 1985 - Docket No. 50-423) regarding partial fire detection coverage for Fire Area CB-9, and the lack of automatic water suppression and the lack of ventilation duct protection for peripheral rooms in Fire Area CB-9.

C.7.c. Cable Spreading Room

POSITION C.7.c.

The primary fire suppression in the cable spreading room should be an automatic water system such as closed-head sprinklers, open-head deluge system, or open directional water spray system. Deluge and open spray systems should have provisions for manual operation at a remote station; however, there should be provisions to preclude inadvertent operation. Location of sprinkler heads or spray nozzles should consider cable tray arrangements and possible transient combustibles to ensure adequate water coverage for areas that could present exposure hazards to the cable system. Cables should be designed to allow wetting down with water supplied by the fire suppression system without electrical faulting.

Open-head deluge and open directional spray systems should be zoned.

The use of foam is acceptable.

Cable spreading rooms should have:

- (1) At least two remote and separate entrances for access by fire brigade personnel;
- (2) An aisle separation between tray stacks at least 3 feet wide and 8 feet high;
- (3) Hose stations and portable extinguishers installed immediately outside the room;
- (4) Area smoke detection; and
- (5) Continuous line-type heat detectors for cable trays inside the cable spreading room.

Drains to remove firefighting water should be provided. When gas systems are installed drains should have adequate seals or the gas extinguishing systems should be sized to compensate for losses through the drains.

A separate cable spreading room should be provided for each redundant division. Cable spreading rooms should not be shared between reactors. Each cable spreading room should be separated from the others and from other areas of the plant by barriers with a minimum fire rating of three hours. If this is not possible, a dedicated system should be provided.

The ventilation system to each cable spreading room should be designed to isolate the area upon actuation of any gas extinguishing system in the area. Separate manually actuated smoke venting that is operable from outside the room should be provided for the cable spreading room.

RESPONSE C.7.c.

The cable spreading room is separated from the balance of the plant by 3-hour fire-rated barriers. Both safe shutdown divisions are installed in the room. The alternative shutdown system has been provided in a remote fire area.

There are two remote and separate entrances to the room for fire fighting access. Continuous line-type heat detectors for cable trays are not utilized, as area detection is provided and alternate shutdown capability exists to bring the plant to cold shutdown if the cable spreading room is lost.

Smoke detectors have been installed to provide early-warning fire detection and to provide one of the discharge input signals for the CO_2 Suppression System. A sampling-type incipient fire detection system (IFD) is installed throughout the area for precombustion stage early warning. Hose stations from the control building stairwell and the adjacent service building areas provide manual fire fighting capability. Normally dry, continuous flow hose reels are installed throughout the area. Portable fire extinguishers, consisting of hand held and wheeled CO_2 , and water mist, are located in the room.

Portable blowers will be used to manually remove the smoke, and CO₂.

No floor drainage has been provided for the room, refer to Response C.5.a.(14). If hose streams are utilized by the fire brigade, water spray will be minimized. The floor is sealed and will not allow water to drain into the switchgear areas below.

A deviation from the BTP guidelines for a fixed water suppression system in this area was requested, in B11243, dated October 9, 1984 and B11494, dated April 30, 1985, and granted in Supplement No. 2 to NUREG 1031, SER, dated September 1985. License Amendment No. 227, and the included NRC Safety Evaluation, issued September 22, 2005, approved a change to the Approved Fire Protection Program allowing the CSA CO_2 system to be modified from automatic to manual actuation. Fire protection features in this fire area have been enhanced to provide additional fire detection and suppression capabilities. The enhancements include an IFD system and additional manual fire fighting features (continuous flow hose reels, fire extinguishers, etc.), and provide the primary fire protection capability for this area. The manual CO_2 system provides fixed backup suppression capability for the area.

C.7.d. Plant Computer Rooms

POSITION C.7.d.

Computer rooms for computers performing safety-related functions that are not part of the control room complex should be separated from other areas of the plant by barriers having a minimum fire resistance rating of three hours and should be protected by automatic detection and fixed automatic suppression. Computers that are part of the control room complex but not in the control room should be separated and protected as described in Position C.7.b. Computer cabinets located in the control room should be protected as other control room equipment and cable runs therein. Non-safety related computers outside the control room complex should be separated from safety-related areas by fire barriers with a minimum rating of three hours and should be protected as needed to prevent fire and smoke damage to safety-related equipment.

RESPONSE C.7.d.

The computer room located adjacent to the control room complex is not a safety-related system. This room (Fire Area 10A and B) is separated from all areas of the control room by fire-rated construction. The underfloor area of the computer room is protected by a total flooding Halon suppression system. Smoke detection installed below the noncombustible suspended ceiling in the computer room provides early warning fire detection for this area.

C.7.e. Switchgear Rooms

POSITION C.7.e.

Switchgear rooms containing safety-related equipment should be separated from the remainder of the plant by barriers with a minimum fire rating of three hours. Redundant switchgear safety divisions should be separated from each other by barriers with a 3-hour fire rating. Automatic fire detectors should alarm and annunciate in the control room and alarm locally. Cables entering the switchgear room that do not terminate or perform a function there should be kept at a minimum to

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minimize the combustible loading. These rooms should not be used for any other purpose. Fire hose stations and portable fire extinguishers should be readily available outside the area.

Equipment should be located to facilitate access for manual firefighting. Drains should be provided to prevent water accumulation from damaging safety-related equipment (see NFPA 92M, "Waterproofing and Draining of Floors"). Remote manually actuated ventilation should be provided for venting smoke when manual fire suppression effort is needed (see Position C.5.f.).

RESPONSE C.7.e.

Switchgear rooms are separated from the remainder of the plant by 3-hour fire-rated barriers. A manual low pressure CO_2 fire extinguishing system is provided. Fire detection systems alarm and annunciate in the control room and locally. Manual hose stations are located in the normal and West switchgear areas and portable fire extinguishers provide manual fire suppression capability.

Remote manually actuated ventilation is provided for venting smoke to facilitate fire fighting. This is accomplished via the control building purge ventilation system with manual actuation initiated at the ventilation panel in the control room.

Floor drains are not installed but a deviation request has been granted on the requirement. Refer to FP-20, Switchgear Room Floor Drains Deviation Request submittal, Docket No. 50-423, B11090, W. G. Counsil to B. J. Youngblood, dated March 23, 1984 for further details.

C.7.f. Remote Safety-Related Panels

POSITION C.7.f.

Redundant safety-related panels remote from the control room complex should be separated from each other by barriers having a minimum fire rating of three hours. Panels providing remote shutdown capability should be separated from the control room complex by barriers having a minimum fire rating of three hours. Panels providing remote shutdown capability should be electrically isolated from the control room complex so that a fire in either area will not affect shutdown capability from the other area. The general area housing remote safety-related panels should be provided with automatic fire detectors that alarm locally and alarm and annunciate in the control room. Combustible materials should be controlled and limited to those required for operation. Portable extinguishers and manual hose stations should be readily available in the general area.

RESPONSE C.7.f.

The alternate shutdown panel is located in the west switchgear room of the control building.

The fire transfer panel is located in the east switchgear room of the control building.

Refer to Response C.7.e. for details of construction and protection in this area.

Electrical isolation of the panel is discussed in Section 8 of the FPER.

C.7.g. Safety-Related Battery Rooms

POSITION C.7.g.

Safety-related battery rooms should be protected against fires and explosions. Battery rooms should be separated from each other and other areas of the plant by barriers having a minimum fire rating of three hours inclusive of all penetrations and openings. DC switchgear and inverters should not be located in these battery rooms. Automatic fire detection should be provided to alarm and annunciate in the control room and alarm locally. Ventilation systems in the battery rooms should be capable of maintaining the hydrogen concentration well below 2 volume percent. Loss of ventilation should be alarmed in the control room. Standpipe and hose and portable extinguishers should be readily available outside the room.

RESPONSE C.7.g.

The battery rooms are separated from each other and from the balance of the plant by 3-hour fire-related barriers. DC switchgear and inverters are located outside of the battery rooms. Smoke detection systems are provided in each battery room. Hose stations and portable fire extinguishers are available in the areas for manual fire suppression. The ventilation system is designed to maintain the hydrogen levels below 2 percent by volume. Air flow monitors that alarm in the control room to detect the loss of ventilation have been provided in each battery room ventilation system.

C.7.h. Turbine Building

POSITION C.7.h.

The turbine building should be separated from adjacent structures containing safety-related equipment by a fire barrier with a minimum rating of three hours. The fire barriers should be designed so as to maintain structural integrity even in the event of a complete collapse of the turbine structure. Openings and penetrations in the fire barrier should be minimized and should not be located where the turbine oil system or generator hydrogen cooling system creates a direct fire exposure hazard to the barrier. Considering the severity of the fire hazards, defense in depth may dictate additional protection to ensure barrier integrity.

RESPONSE C.7.h.

The protection for the turbine building satisfies the guidelines of this position.

C.7.i. Diesel Generator Areas

POSITION C.7.i.

Diesel generators should be separated from each other and from other areas of the plant by fire barriers having a minimum fire resistance rating of three hours.

Automatic fire suppression should be installed to combat any diesel generator or lubricating oil fires; such systems should be designed for operation when the diesel is running without affecting the diesel. Automatic fire detection should be provided to alarm and annunciate in the control room and alarm locally. Hose stations and portable extinguishers should be readily available outside the area. Drainage for firefighting water and means for local manual venting of smoke should be provided.

Day tanks with total capacity up to 1100 gallons are permitted in the diesel generator area under the following conditions:

- (1) The day tank is located in a separate enclosure with a minimum fire resistance rating of three hours, including doors or penetrations. These enclosures should be capable of containing the entire contents of the day tanks and should be protected by an automatic fire suppression system, or
- (2) The day tank is located inside the diesel generator room in a diked enclosure that has sufficient capacity to hold 110 percent of the contents of the day tank or is drained to a safe location.

RESPONSE C.7.i.

A deviation request has been discussed with the NRC staff regarding the EGE sprinkler design (mode of operation) as well as other guideline differences. A deviation request has been submitted and transmitted to the NRC (W. G. Counsil to B. J. Youngblood, Letter B11534, dated July 25, 1985 - Docket No. 50-423) regarding the lack of automatic suppression and the lack of drainage in Fire Areas EG-3 and EG-4.

Deviation request granted on the day tank arrangement. Refer to FP- 21, Emergency Diesel Generator Day Tanks Deviation Request submittal, Docket No. 50-423, B11090, W. G. Counsil to B. J. Youngblood dated March 23, 1984 for further details.

Each diesel generator is located in a different fire area separated by 3-hour fire-rated barriers. All cable and piping penetrations through the fire-rated barriers are to be fitted with 3-hour fire-rated penetration seals.

Refer to the Suppression System Deviation request for other construction/protection features in this area.

C.7.j. Diesel Fuel Oil Storage Areas

POSITION C.7.j.

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Diesel fuel oil tanks with a capacity greater than 1,100 gallons should not be located inside buildings containing safety-related equipment. If above-ground tanks are used, they should be located at least 50 feet from any building containing safety-related equipment or, if located within 50 feet, they should be housed in a separate building with construction having a minimum fire resistance rating of three hours. Potential oil spills should be confined or directed away from buildings containing safety-related equipment. Totally buried tanks are acceptable outside or under buildings (see NFPA 30, "Flammable and Combustible Liquids Code," for additional guidance).

Above-ground tanks should be protected by an automatic fire suppression system.

RESPONSE C.7.j.

Diesel oil tanks for the emergency generators are located below ground in separate three hour fire rated resistance rated vaults. These vaults are provided with automatic total flooding CO_2 suppression.

Fuel oil tanks for the auxiliary boilers are buried in the yard adjacent to the auxiliary boiler room.

The SBO diesel fuel oil tank is a separate above ground tank with an integral containment dike located directly south of the SBO diesel generator enclosure. There is no safety-related equipment within 50 feet of the tank. The above ground SBO fuel oil storage tank has no automatic fire suppression system. Fire fighting foam, portable CO_2 fire extinguishers and dry chemical fire extinguishers are provided for fire brigade use to quickly extinguish a fire. MP2 credits the MP3 SBO diesel generator including its fuel system for fires in MP2 Appendix R Fire Areas R-1, R-11 and R-16. Safe shutdown would not be affected since a fire in these MP2 areas is not assumed to occur coincident with a fire in the MP3 SBO area.

C.7.k.Safety-Related Pumps

POSITION C.7.k.

Pump houses and rooms housing redundant safety-related pump trains should be separated form each other and from other areas of the plant by fire barriers having at least three hour ratings. These rooms should be protected by automatic fire detection and suppression unless a fire hazards analysis can demonstrate that a fire will not endanger other safety-related equipment required for safe plant shutdown. Fire detection should alarm and annunciate in the control room and alarm locally. Hose stations and portable extinguishers should be readily accessible.

Floor drains should be provided to prevent water accumulation from damaging safety-related equipment (see Position C.5.a.(14)).

Provisions should be made for manual control of the ventilation system to facilitate smoke removal if required for manual firefighting operation (see Position C.5.f.).

RESPONSE C.7.k.

With the exception of the auxiliary building (Elevation 24 feet 6 inches) RPCCWP and charging pumps, all safety-related pumps are adequately separated. Refer to Response C.5.e.(2) for details. A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11658, dated August 16, 1985 - Docket No. 50-423) regarding separation of pumps within the ESF Building due to a 12 inch diameter fiberglass reinforced pipe which passes through the 3-hour fire barriers separating the pumps and associated. A closed head water curtain with directional spray heads is provided to maintain separation by protecting the fiberglass pipe. A deviation request has been submitted and transmitted to the NRC (J. F. Opeka to B. J. Youngblood, Letter B11534, dated July 25, 1985 -Docket No. 50-423) regarding separation of pumps and equipment with the Circulating and Service Water Pump House due to 1.5 inch diameter fiberglass drain lines which pass through 3-hour fire barriers separating redundant pumps/trains.

C.7.1. New Fuel Area

C.7.m. Spent Fuel Pool Area

POSITION C.7.1. and m.

Hand portable extinguishers should be located within this area. Also, hose stations should be located outside but within hose reach of this area. Automatic fire detection should alarm and annunciate in the control room and alarm locally. Combustibles should be limited to a minimum in the new fuel area. The storage area should be provided with a drainage system to preclude accumulation of water.

The storage configuration of new fuel should always be so maintained as to preclude critically for any water density that might occur during fire water application.

Protection for the spent fuel pool area should be provided by local hose stations and portable extinguishers. Automatic fire detection should be provided to alarm and annunciate in the control room and to alarm locally.

RESPONSE C.7.1. and m.

Portable fire extinguishers and hose stations are located throughout the building. Smoke detection and drainage is provided as noted in the fire hazard analysis.

C.7.n. Radwaste and Decontamination Areas

POSITION C.7.n.

Fire barriers, automatic fire suppression and detection, and ventilation controls should be provided.

RESPONSE C.7.n.

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The waste disposal building is separated from other areas of the plant by a 3-hour fire-rated barrier. A water sprinkler system is provided in the solid waste area. Automatic fire detection with alarm and annunciation locally and in the control room is provided in portions of the liquid waste area. Manual hose stations and portable extinguishers are strategically located in the entire waste disposal building. The ventilation systems can be isolated from the mechanical equipment room. Fire protection water will drain to the contaminated drain system.

The decontamination areas located in the service building have been provided with HEPA controlled ventilation equipment.

C.7.o. Safety-Related Water Tanks

POSITION C.7.o.

Storage tanks that supply water for safe shutdown should be protected from the effects of an exposure fire. Combustible materials should not be stored next to outdoor tanks.

RESPONSE C.7.o.

Storage of combustibles on site will be controlled by an existing administrative control procedure.

All inside storage tanks are protected by passive means against exposure fires.

C.7.p. Records Storage Areas

POSITION C.7.p.

Records storage areas should be so located and protected that a fire in these areas does not expose safety-related systems or equipment (see Regulatory Guide 1.88, "Collection, Storage, and Maintenance of Nuclear Power Quality Assurance Records").

RESPONSE C.7.p.

Records storage areas at Millstone 3 are arranged so as to not expose safety-related systems or equipment.

POSITION C.7.q.

Cooling towers should be of noncombustible construction or so located and protected that a fire will not adversely affect any safety- related systems or equipment. Cooling towers should be of noncombustible construction when the basins are used for the ultimate heat sink or for the fire protection water supply.

RESPONSE C.7.q.

Millstone 3 does not have cooling towers.

C.7.r. Miscellaneous Areas

POSITION C.7.r.

Miscellaneous areas such as shops, warehouses, auxiliary boiler rooms, fuel oil tanks, and flammable and combustible liquid storage tanks should be so located and protected that a fire or effects of afire, including smoke, will not adversely affect any safety-related systems or equipment.

RESPONSE C.7.r.

Consideration was given to the location and protection of these areas to avoid or control fire exposure to safety-related systems and equipment.

C.8. SPECIAL PROTECTION GUIDELINES

C.8.a. Storage of Acetylene-Oxygen Fuel Gases

POSITION C.8.a.

Gas cylinder storage locations should not be in areas that contain or expose safety-related equipment or the fire protection systems that serve those safety-related areas. A permit system should be required to use this equipment in safety-related areas of the plant (also see Position C.2.).

C.8.b. Storage Areas for Ion Exchange Resins

POSITION C.8.b.

Unused ion exchange resins should not be stored in areas that contain or expose safety-related equipment.

C.8.c. Hazardous Chemicals

POSITION C.8.c.

Hazardous chemicals should not be stored in areas that contain or expose safety-related equipment.

C.8.d. Materials Containing Radioactivity

POSITION C.8.d.

Materials that collect and contain radioactivity such as spent ion exchange resins, charcoal filters, and HEPA filters should be stored in closed metal tanks or containers that are located in areas free from ignition sources or combustibles. These materials should be protected from exposure to fires

in adjacent areas as well. Consideration should be given to requirements for removal of decay heat from entrained radioactive materials.

RESPONSE C.8.

There are no permanent gas cylinder storage arrangements within the plant which expose safety-related equipment or fire protection systems which serve these safety-related areas.

Existing administrative control procedures address storage, handling, and use of ion exchange resins, hazardous chemicals, and other materials within the plant.

APPENDIX C—SUMMARY OF COMPARISON WITH 10 CFR 50, APPENDIX R

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III

A.	Fire Protection Program
	Refer to Section 3 or Appendix B, Position C.1.a, of the FPER.
B.	Fire Hazards Analysis
	Refer to Section 5 or Appendix B, Position C.1.b, of the FPER.
C.	Fire Prevention Features
	Refer to Sections 3, 4, and 5 of the FPER.
D.	Alternative or Dedicated Shutdown Capability
	Refer to Sections 6 through 9 of the FPER.
A.	Water Supplies for Fire Suppression System
	Refer to Section 4 or Appendix B, Position C.6.b., of the FPER.
B.	Section Isolation Valves
	Refer to Section 4 or Appendix B, Position C.6.b(2), of the FPER.
C.	Hydrant Isolation Valves
	Refer to Section 4 or Appendix B, Position C.6.b(3), of the FPER.
D.	Manual Fire Suppression
	Refer to Appendix B, Position C.6.c(4) through (7), of the FPER.
E.	Hydrostatic Hose Test
	Hoses are tested and purchased in accordance with Appendix B, Position C.6.c(6), of the FPER.
F.	Automatic Fire Detection
	Refer to Appendix B, Position C.6.a, of the FPER.

- G. Fire Protection of Safe Shutdown CapabilityRefer to Appendix B, Position C.5.b, of the FPER.
- H. Fire Brigade

Refer to Appendix B, Position C.3, of the FPER.

- I. Fire Brigade Training Refer to Appendix B, Position C.3, of the FPER.
- J. Emergency LightingRefer to Appendix B, Position C.5.g, of the FPER.
- K. Administrative ControlsRefer to Appendix B, Position C.2, of the FPER.
- L. Alternative and Dedicated Shutdown Capability Refer to Appendix B, Position C.5.c, of the FPER.
- M. Fire Barrier Cable Penetration Seal QualificationRefer to Appendix B, Position C.5.a(3), of the FPER.
- N. Fire Doors

Refer to Appendix B, Position C.5.a(5), of the FPER.

O. Oil Collection System for the Reactor Coolant Pumps Refer to Appendix B, Position C.7.e, of the FPER.